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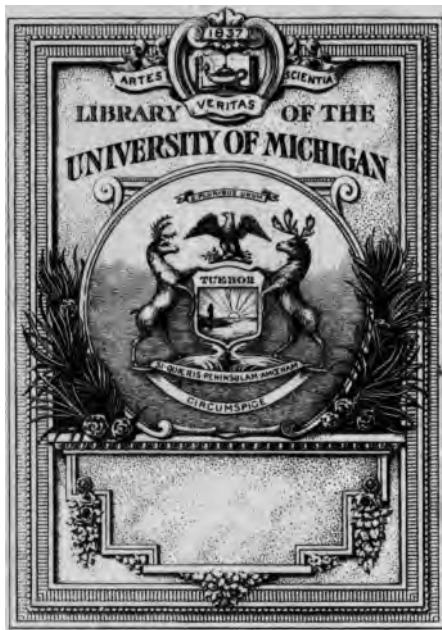
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# YOUTH AND THE OPEN DOOR

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GEORGE ROSS WELLS

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## **YOUTH AND THE OPEN DOOR**



# YOUTH AND THE OPEN DOOR

*THE RELATION OF HABIT AND  
CHARACTER TO SUCCESS*

BY

GEORGE ROSS WELLS

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IN APPRECIATION OF AID, ENCOURAGEMENT AND ACTIVE  
SYMPATHY, WITHOUT WHICH THE VOLUME COULD  
NOT HAVE BEEN PRODUCED, THIS BOOK IS  
DEDICATED TO MY WIFE

**MILDRED SAYLES MEADER WELLS**



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## PREFACE

The following pages were originally penned in the form of lectures to be delivered to the freshmen of Ohio Wesleyan University, as a part of a course known as Freshman Fundamentals. The purpose of this course was to serve as a general introduction to the various subjects of study and to discuss the ways and means whereby the budding student could hope to obtain as much benefit as possible from the four years of college on which he, or she, was just entering. Certain considerations made it seem possible that the lectures could be re-written so as to be of service to a wider group than that comprised in the college class. The lectures have, therefore, been thoroughly revised and much new material has been added. While doing so, the author has kept in mind the needs and interests of the different group of auditors, or rather readers, to which it is now offered.

The author gratefully acknowledges aid re-

ceived from so large a number of writers on Psychology and cognate subjects that specific reference is quite impossible. But particular acknowledgment must be made to President John W. Hoffman, to Dr. William G. Hormell, Dean of Men, and to Mrs. G. H. Geyer, Associate Dean of Women, of Ohio Wesleyan University. To these three the author owes sincere thanks, for without their aid the lectures which form the foundation of this volume could not have been delivered.

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## **YOUTH AND THE OPEN DOOR**



# YOUTH AND THE OPEN DOOR

## CHAPTER ONE

### INSTINCT

THE most amazing thing about people is that they are so different. When one stands upon the corner of two streets in a great city, for instance, at Broadway and Forty-second Street, and watches the throngs of people hurrying by, there is one impression that is almost certain to occur and bound to persist. People are so very different! They possess features in common, two eyes, two ears, a nose, a mouth and a chin, but these are so combined as to produce innumerable effects. One might suppose offhand that two people might be found now and then who would look exactly alike, but how often do two people really resemble each other strongly enough to call for remark? Men neither look alike, nor talk alike. Far less do

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they think alike. Their tastes, their loves, their hatreds, their hopes, their fears, their ambitions are amazingly different. And though these differences are omnipresent they continually surprise us. It is always an incomprehensible thing that that which we love, others hate. One of the writer's small children dislikes ice-cream, and in the minds of her brother and sister this dislike is incomprehensible. They would probably worry about it a good deal, did not her abstinence in this matter occasionally work to their advantage. Throughout all the world of men, young and old, the fact of difference is salient, difference both in appearance and in ideas. To the student of human affairs in general, perhaps to the psychologist in particular, the factors which make for the differences among men are more important than those which produce our common resemblances. Not only are they more important but they are more difficult to determine and to describe.

Speaking generally, there are two classes of factors which by their co-operation determine that men shall be different in most things, alike in very few. To give these factors their com-

mon names, they may be named "heredity" and "experience." By heredity we mean the fact that the organisms with which we start life are individually different. By the fact of experience we mean, of course speaking very briefly, that the circumstances in life amid which we stand or have stood make definite and lasting impressions upon our organisms in general, and upon our nervous systems in particular.

The two statements just made require elaboration. The matter of heredity is to a very large extent the matter of instinct. The effect of experience is what is ordinarily termed habit. This introductory chapter is concerned with instinct. A succeeding chapter shall be devoted to a discussion of habit.

It is only in a political sense that men are born equal. Men are not born equal—precisely the opposite is true. The race of life is a handicap. Men start with all sorts and degrees of advantage or disadvantage. Some men in a sense "beat the gun," others are left hopelessly outdistanced at the very start, as it were, left at the post and with no possibility of ever catching up.

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It must never be forgotten that men's possibilities are limited not only by their environment, but also by their nervous, mental and physical equipment. One cannot perform impossibilities. One cannot escape the limitations of his particular neuro-muscular machine. The great athlete must have the necessary muscle and bone, or at least a certain minimum of it. The singer must have the vocal cords of correct length, and the resonating surfaces of the throat and pharynx must be so curved as to pick out and emphasize those tones which are most pleasing to the ear. Lacking this physiological equipment Caruso would have been mute. This is not to say that nothing more is necessary. While Caruso received as a prenatal gift a superb mechanism for the production of music, it required intense patience, much learning and countless hours of labor, for him to attain to the unique position he held in the world of music. It may be that in some quiet nook or corner of the world there lives another man with equally perfect organs for producing sound, but if so the world does not know him because these organs have not been trained. Training is essential, but

no less essential is it that the original mechanism be fitted for the task at which the man is to labor. And that task will be chosen partly by the circumstances governing the life of the man, partly by the nature of the neuro-muscular mechanism which he possesses.

Most of us can never hope to sing like Caruso, to be surgeons like Carrel, to be ball-players like Ty Cobb. The fact is, simply, that we have not the particular gift of perfect mechanism which gives to these artists pre-eminence, which goes so far toward making them the virtuosos which they are. There are many singers who have worked hard and faithfully and have attained no success at all. The bush leagues are full of men who practice day in and day out, but who will never get into the major leagues. They have not the requisite mechanism of wind and limb and nervous system. At every graduate school there are men who have been students in their chosen subjects for many years, have perhaps earned high degrees by patience and toil, but whose acquaintances all know that some spark, some vital force, some ability is lacking, and that despite all the labor they may expend

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they will never become eminent in their fields of learning. There are internes in every great hospital, who spend long periods of time, perhaps years, assisting great surgeons in their operations, handing them their scalpels or hæmostats, and perhaps administering anæsthetics, but who will never become great surgeons themselves. Let them dream and labor ever so much, they may never become even passable operators. In the cases of all these aspirants nature has simply not bestowed the apparatus for extremely accurate and detailed manual action, nor for cool thought in moments of stress and emergency. On the other hand the expert has been born with just that kind of apparatus.

To repeat, the race of life is evidently a handicap. Men do not all get an equal start. Go into the baby ward of a large hospital and look at the week's crop of babies. See them lying two or three in a bed with numbered tags to identify them. They look very much alike to the average visitor. The visitor, at least if he be a man, feels relieved that they have been carefully numbered, otherwise they must certainly become mixed, no matter what the average man's wife

may say about the ease with which they can be distinguished. But if you look at those babies again after three or four months they do not look nearly as much alike as they did in the first week of their lives. In weight, in color, in activity, even in disposition, they have changed. Each is going his own way, and their roads have already diverged to some extent. Look at them again after ten years, after twenty years; wait until they have accomplished their three score and ten, and they will not only have lost all close resemblance, but will have become so different that they may almost seem to belong to different species.

Take these two babies who lie so close together on the same cot, both fair-haired, blue-eyed little mites of about the same weight and stature. They are of the same age. Each of them comes from a middle-class home, and they each will receive all the ordinary advantages of a life and upbringing in an American city. They may go to school together. They may run each other a close race for some years. Their school marks may compare well for a year or two. They may play in the same groups, the same

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games. But by the time they are, say, eight years old, certain differences are apparent. One of them gets his school lessons with ease, is a leader among his playmates; arranges the games and chooses the sides; shows actual force of character, and finds in opposition and difficulty only challenges to combat which he willingly and cheerfully accepts. The other has found that through the latter months of these eight years his school work has become more and more difficult. He labors at it, but with decreasing success. He repeats the second grade and is then placed in the third that he may try to master it if possible, his teacher being more than dubious about his success. Among his playmates he takes a subordinate part. He always accepts orders, follows other leaders. In his games with his playmates he is always "It." At eight years of age we find that these two children who started so much alike show very marked differences.

After-life accentuates these differences. The first one is successful in his business. He is a leader of men, he may even become eminent. But the second drops out of school early in life,

having found its tasks impossible. There is no success for him. If he be fortunate enough to have loving relatives, he may be well cared for and live happily enough. But if he be forced to fight the battle of life alone, he goes under, defeated early in the day. He may become the tool of unscrupulous men, become a cheap criminal, or labor at one of those very simple and disagreeable tasks, fearfully ill-paid, which society still requires some unfortunates to perform. He may become a ward of the state and spend his life in some institution, or he may even perish from lack of proper nutrition or shelter, which he is quite incapable of providing for himself.

In a New England city, famous for its cotton mills, there is a large machine shop, which manufactures machinery for the cotton industry. In that machine shop there is, or was, an interesting figure of a man, interesting, at least to the psychologist, or the sociologist. He was, a few years ago, apparently about sixty years of age, well grown, with white hair and beard. If he could have had the attention of a valet and a tailor he was capable of becoming a very presentable, if not an imposing, figure. His work

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in the machine shop was to sweep the filings from the floor and from the bases of the lathes. He had been at that task for about two score years. He had gone into the machine shop as a boy, with other boys. They had all been set to work at the same kind of labor, sweeping, dusting, cleaning up, making themselves generally useful. One boy after another had gone on, had shown some aptitude in the handling of machine tools and had been given a lathe or drill, had perhaps mastered that and risen higher; perhaps had become assistant foreman or foreman. One or two of the group may have studied in their spare hours and have acquired greater technical skill and theoretic knowledge and have become master mechanics. But the man mentioned did not go ahead in that way. He remained stationary; he continued to sweep the iron filings into little piles and to shovel them into a small cart, day after day and year after year. He saw the other boys pass him, and, no doubt, wondered why. He did not dissipate, at least not enough to account for his lack of success, he can't be truthfully said to have been lazy, but even after forty years he had not be-

come an efficient sweeper. Even this simple task he did not do well.

The explanation of the tragedy exemplified in this old man's life is to be found in the fact of an inferior inherited mechanism, incapable of any form of high-class labor. This man, presentable and apparently capable though he be, really possesses such low mental capacity that experience has proved him unable to keep himself on the same level as his companions and friends. He came into the world with an inadequate mental equipment. Though his muscular equipment was normal, his mentality was subnormal; he may even have been feeble-minded. Had it not been for the fact that the shop for which he worked was willing to pay him a pittance, in reality more than he was worth, he would have become a burden upon his relatives, or have simply starved to death. In a word, the mental side of his neuro-muscular equipment was hopelessly inadequate to enable him to win success in a competitive society.

It should be stated, however, that under certain conditions it is possible for a man to possess an inadequate mechanism and pass fairly well

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among his comrades if there happen to be at hand someone who will give him the helping hand that he needs. A brother, a father, perhaps a wife, may furnish just that little extra ability, that guidance, without which the man would inevitably fail. Now and then one may see in the papers the notice of the failure of a certain company, composed originally of two brothers, and at one time very successful. One brother has died and after some lapse of time, a year or so, the brother who is left proves himself incapable of managing the company. This incapacity has never been suspected by his associates during the lifetime of the brother now dead. The probable explanation of this and similar cases is that one brother has all his life been slightly below normal, mentally. As long as he had assistance and sympathetic guidance, his inability was unnoticed, but when circumstances forced him to operate by himself he was not quite capable of meeting the requirements of the situation.

Two extremes have been mentioned, that of the man who is extremely generously equipped, that of the one who is not sufficiently equipped.

Between these two extremes there are all degrees of adequacy in mental equipment. In any large group of men there will be found those who have been generously treated by nature and those with whom nature has dealt in a niggardly manner.

The equipment with which men and other animals begin life consists of that nervous muscular mechanism by means of which certain forms of adjustment are made. All animals in the beginning of their life are capable of certain set movements. These may be simple or very complex, but they do not have to be learned. The ability to perform them is inborn.

In its simplest form such movement is termed "protoplasmic irritability." The unicellular Amœba proteus possesses the power of moving away from a drop of dilute acid, from an overheated or underheated area of the culture water in which it dwells, or from the touch of the point of a glass rod. It moves toward the decaying scrap of straw about which are clustered bacteria, its food material. Why it so moves one cannot say except in terms of purposes achieved or to be achieved, but likewise no one can say

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why an iron filing moves toward a magnet, nor why a comet moves through the Empyrean. The occurrence of such movement is the elementary fact from which we start.

A more complicated form of innate or inborn movement is known as "reflex." Reflexes differ from the above-mentioned irritability only in the fact that it occurs in multicellular organisms and is the form which the more primitive irritability must of necessity take when muscles and bones are present. The reflex contraction of a muscle, for instance, the muscle of the eyelid as an object suddenly approaches the eye, is of exactly the same nature as the withdrawal of an Amœba from a drop of weak acid. But the mechanism which produces the reflex is more complicated.

Still higher in the scale of complexity are those movements which we know as "instincts." Instinct is movement, not knowledge. We instinctively do, we do not instinctively know. Possibly this statement should be subjected to a certain degree of limitation, but in its essentials it will certainly be regarded as true by the majority of psychologists and physiologists.

Definitions of instinct vary somewhat, but

either of the following is probably acceptable to the majority of psychologists. Professor Ed. Claparéde of Geneva says that instinct "is an act adapted and accomplished, without having been learned, in a uniform fashion for all individuals of the same species, without knowledge of the end aimed at, nor of the relation between that end and the means taken to attain it."<sup>1</sup>

Professor J. B. Watson of Johns Hopkins in a recent book writes, "We should define instinct as an hereditary pattern reaction, the separate elements of which are movements principally of the striped muscles.<sup>2</sup> It might otherwise be expressed as a combination of explicit congenital responses unfolding serially under appropriate stimulation."<sup>3</sup> In another place Watson explains that by "pattern reaction" "we mean that the separate details of response appear with some constancy, with some regularity and in approximately the same sequential order each time the exciting stimulus is presented."<sup>4</sup>

<sup>1</sup> Claparéde, Ed., "Théorie Biologique du Sommeil," *Arch. de Psychol.*, 1905, p. 279.

<sup>2</sup> *I.e.*, the voluntary muscles.

<sup>3</sup> Watson, J. B., "Psychology from the Standpoint of a Behaviorist," p. 231.

<sup>4</sup> *Ibid.*, p. 195.

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It may be that a simpler statement than either of the above will serve us here, and therefore for the purposes of this discussion instinct may be defined as movement, the form or order of which is determined by an inherited neural-muscular mechanism, and which operates to preserve and perpetuate the species which possesses or practices it.

If an animal is placed in a certain kind of situation, it may happen that that animal at once adapts itself to its surroundings, even if those surroundings and the movements of adaptation are very complicated. But for this to be possible the situation must bear a definite and close relation to the environment to which that species of animal is accustomed. The child only a few hours old will close its hand upon the finger of its mother or upon a pencil if it is held touching the palm of the child's hand. Given appropriate stimuli, the lips and features in general make the sucking reaction, and still earlier in the life of the infant it is a touch of cold air upon its body which first calls forth or excites the respiratory movement. Such actions as these are

instincts. They differ from reflexes chiefly in their complexity.

But many more marvellous reactions than these are to be observed. It is doubtful if in the whole world of nature there are any fields more apt to awaken wonder than the fields of instinct. So truly do instinctive reactions meet the requirements of the situations which call them forth that to a casual glance they seem to be the result of long-continued and careful thought. But yet it is impossible that if they be the product of thought, that thought can be on the part of the individual making the instinctive movement. And this is obviously true for the very simple reason that the young animal, human or other, will make these instinctive movements without there being the least possibility of any training, or of the existence of any degree of former knowledge of the act and its results.

One of the most amazing forms of instinctive response is that found in bird migration. As is well known, there are birds which spend one-half of the year in one part of the world and the remainder in an entirely different part. A most

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interesting example is found in the following quotation. "The American Golden Plover is known to travel in the neighborhood of fifteen thousand miles a year. Its breeding grounds are well within the Arctic Circle far beyond the northern tree line. In fact Gen. Greeley, the Arctic explorer, found it nesting at  $81^{\circ}$  N. latitude, within six hundred miles of the North Pole. These remarkable birds arrive in the far north about June 1st, remaining there approximately ten weeks. By the latter part of August, nesting duties completed, they have already travelled as far south as Labrador where a rich temporary feeding ground supplies them while the crowberries, common to that region, are ripening. From Labrador they move farther south to Nova Scotia, and thence straight out over the open ocean eighteen hundred miles to the islands that lie east of Cuba and Porto Rico, sometimes breaking the journey at the Bermudas eight hundred miles south of Nova Scotia but more frequently passing by to the eastward. From the eastern Antilles to the continent of South America is a flight of six hundred miles more, and after this mainland is reached they press

on to the Pampas region of Patagonia where they remain for the winter months, eight thousand miles from their nesting grounds. March finds them on the move again as far north as Guatemala and Texas. During April they are traversing the Mississippi valley, in May the vast territory of Canada, while early in June they are nest-building again in the land of the midnight sun, having completed the fifteen thousand mile circuit.”<sup>5</sup> It is probable that these birds are the greatest of living travelers.

The question as to how these birds find their way is at once suggested. How do the young birds know the route to be followed? What urges them to leave the place where they have been hatched and raised, and to journey so far and so long? As to how they find their way, the problem to-day is unanswered. No one knows. But the facts concerning such flights are indisputable. Although there is evidence that the routes of migration have changed, not from year to year, but from half century to half century, the main fact remains true that birds hatched

<sup>5</sup> Walter, H. E., “Theories of Bird Migration,” *School Science and Mathematics*, April-May, 1908.

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in one country may leave and fly many thousand miles to another country, though they have never been over the route before.

It is worth while to speak of the various purposes of instinct. They may be briefly summed up as four in number. In the first place instinct exists to preserve life. The instincts of this type are those which have to do with food getting, and with the avoiding of danger. In each of these cases it is obvious that the animal uses the particular apparatus with which Nature has provided it, and the varied reactions of animals of different species in similar situations are different in form because of the extremely different mechanisms possessed by those different species. Animals of the cat tribe lie in wait for their food, exhibiting what seems to men to be an almost inconceivable degree of patience. A dog or a wolf runs its game, a type of action in which no cat ever indulges naturally, and which cannot ordinarily be taught it. The action in each of these cases is not the result of a careful consideration of the best means to an end but is, literally, the only way in which the animal can accomplish that end. The cat *of course*

lies in wait for the mouse. From the feline standpoint it is the only method of obtaining food. The dog *of course* chases the rabbit. It is inconceivable to the dog that there is any other thing to do. And when it comes to the method of killing its game, the dog, the cat, the eagle and the cobra will each use his own methods of offense. The herbivorous animal will seek its food in its own particular way. These animals are all alike in that they exhibit the food-taking reaction. They are different in the particular form which that reaction assumes for each of them.

The second purpose which instinct accomplishes in animal life is that of perpetuating the race. Two forms of this attitude may be mentioned. There is, first of all, the sex instinct, properly so called, exhibited by all higher animals, including man. The sex instinct is seasonal in its appearance, less so as regards man than the other animals. The sex instinct when it appears is liable to dominate all behavior, though the higher the type of the animal concerned the smaller will be the degree of this domination.

The second form which sex instinct assumes

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is usually known as parental instinct. This is to be understood as the activity of the parent animals in caring for their young, and is exemplified in the providing of a nest, burrow or other type of home, in the procuring of food adapted to the young, and in the protection of them from wild animals which would make them their prey. It would be impossible in the limited space available to even mention the many ways in which this instinct presents itself, the thousand and one nests that birds build, the many forms of home or burrow which animals construct or discover for their young, the innumerable examples of industry and of courage on the part of parent animals in caring for and protecting their offspring. From our standpoint at present the salient fact is the narrow way in which the particular kind of nest built or of food provided is limited to a particular species. Suppose one should take a young robin and an oriole and a sand martin and a sparrow and bring them up in the same cage, probably an impossible thing to actually do. But let us imagine them growing up together until they become of mating age. Then provide the ma-

terial for nest building and watch these four birds build their nests. It is to be understood that no one of them has seen a nest before. They certainly have never practised at nest building. But they will construct a nest of some sort. The stimulus takes the form of some mysterious urging within them, physiological changes in the body of the bird, undoubtedly, and a very complicated series of reactions is the result. But when finished the oriole will have built an oriole's nest, the robin will have built a nest of straw and feathers and soft mud and have shaped it with its breast after the manner of all robins, the martin will have driven a tunnel into a sand bank, and the sparrow will have piled together a rather careless heap of straw as sparrows always do.

What a very small variation in the feeding habits of birds would result in the destruction of their young! If a hen were given some young robins to bring up, the result would be starvation for the adopted offspring. Only within a narrow range can the parents of one species care for the young of another.

Consider the home building of the beaver, the

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nests constructed by the small rodents, the burrows or hollows which members of the cat family discover and enlarge. Each one of these will arrange its domestic surroundings as its ancestors have done from time immemorial.

Another form of activity which appears on its face to be instinctive in nature is curiosity. It is very closely related to the fear instincts, which are to be classified among those which tend to preserve life. But curiosity is something other than fear. It takes the form of an interest in new objects which is often sufficiently strong to overcome prudence. Undoubtedly because of this impulse, animals may find new food and recognize new enemies. In its highest form, which is seen in man, it has made the progress of civilization possible. It has given us geographical discoveries, scientific research and invention. Because of it the world has moved, without it we still would be where our primitive ancestors were.

There is another type of activity, of a very different sort, which may probably be considered as instinctive, and that is the resting or sleeping reaction. Sleep seems to correspond to the pre-

cise definition of instinct. It depends, as far as its manner, duration and periodicity are concerned, upon an inherited mechanism. And it accomplishes a purpose which is not apparent to the animal indulging in it. The purpose of sleep is not to remove the effects of exhaustion or of intoxication caused by the presence in the system of the waste products of activity, but to prevent the appearance of exhaustion or of intoxication. That is to say that sleep appears before total exhaustion sets in. It is not primarily reparative in nature, but preventative. Of the actual mechanism of sleep very little indeed is known.<sup>6</sup> Some forms of recreation, and some unusual forms of sleep, such as hibernation, may be classed with ordinary slumber in this statement.

Many authors make a much longer list of instincts than these four. The length of the list depends somewhat upon the standpoint from which classification is approached. In the foregoing statement the basis of classification is that

<sup>6</sup> For an interesting and complete statement of this theory of sleep see Claparéde, Ed., "Théorie Biologique du Sommeil," *Arch. de Psychol.*, 1905, pp. 245-349.

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of the purpose, value or meaning of the reaction to the species. There are innumerable forms which instinctive reaction takes, but it is difficult to discover any fundamental purpose served other than these four: self-preservation, reproduction, curiosity and prevention of exhaustion.

Speaking somewhat vaguely and generally it may be said that individuals of a species have a specific resemblance to each other in terms of their instincts. This is literally true in so far as the members of the species possess identical neural-muscular systems. But while it is true that members of the same species will possess the same fighting or fear instincts, it is also true that they will express these in terms of whatever peculiarities their individual neural-muscular mechanisms may exhibit. One deer will be swifter in flight and more cunning in dodging its pursuers than another. It will therefore have a certain advantage in the struggle for existence. One man may possess certain instincts in a more strongly determined way than another. Both of two men who possess all the ordinary instincts for self-preservation may do so in dif-

ferent degrees. To one man the instinct for self-preservation may be the ruling force in his life. To another man, these may be of comparatively small importance. To one person sex may be the central and the most appealing factor in life. To another person it may be almost non-existent, to a third an instinct calling forth only a moderate amount of thought and reaction.

So that the statement made at the first part of this chapter regarding the matter of how people differ, is true. To be sure one man will not differ from another as much as a man differs from a dog, or a dog from a fox, but one man differs from another in so far as the equipment with which he starts life goes, far more than the average person suspects. The Great Teacher once said that to one man may be given ten talents, to another but one. This statement remains as true in psychology as in other fields.

## CHAPTER TWO

### HABIT

THE second main group of factors which determine the differences between people we are accustomed to speak of under the name of "habit." Instincts are not permanently rigid. On the contrary, they possess very considerable plasticity. As has been stated, an animal begins life with a tendency to move in a definite way in certain circumstances. As the animal grows older and achieves various degrees of success in these different circumstances the particular form of the instinctive reactions may change. This fact has been named by James the "inhibition of instinct by habit." A similar fact, very closely related in nature to this he terms the "transitoriness of instinct." This is the fact that if an instinct be not allowed to express itself at the time when the organism is ripe for it, it may be that that instinct will never appear. For instance, consider the hereditary

enmity between dogs and cats. It is a very difficult matter indeed to take an old dog and an old cat and keep them peaceably together in the same house, but it is not at all difficult to place a kitten and a puppy together, and bring them up side by side. They may even become good friends. The point is that in the latter case, at the age at which the instinctive aversion of the two animals each for the other should appear, circumstances have prevented the expression of this aversion. That particular instinctive tendency has disappeared, and, in all probability, will never reappear, at least in so far as the attitude of those two animals toward each other is concerned. The instinct has been completely destroyed.

Experiments on the mouse-catching instinct in kittens have shown that if a kitten be kept from all forms of sensory contact with mice until it is about five months old, the instinct to pursue and attack mice on sight seems to vanish. And if kittens are put in the proximity of mice daily from their earliest infancy the instinct to attack and kill them appears at an age varying from six weeks to about two and a half to three

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months. It is interesting to note that when the instinct does appear it appears all at once, practically full grown. And the kitten killing for the first time will use practically the same repertoire of movements which the old and experienced mouser exhibits.<sup>1</sup>

When one speaks of the inhibition of instinct by habit the reference is to the fact that it is simply the general tendency which is common to members of a species, the special operations of that instinct being individual. It is instinctive in all human infants to try to walk at an age varying from eight or nine months to two years, but the particular form of walk which they acquire is a matter of individual habit. It will depend upon the conditions in which they have learned to walk, on the kind of footgear they wear, to some extent upon whether they live on the plains or in mountainous countries. All human beings walk—that is instinct,—but we each have our own idiosyncratic way of getting over the ground—that is habit.

<sup>1</sup> See Yerkes, R. M., and Bloomfield, D., "Do Kittens Instinctively Kill Mice?" *Psychol. Bulletin*, Vol. 7. Also Berry, "Experimental Study of Imitation in Cats," *Journal of Comp. Neur. and Psychol.*, Vol. 18, pp. 1-25.

The food-taking instinct is found in all animals, human and other. It appears in mammals as the sucking reaction, in chicks as the pecking reaction, in many other young birds in the form of the familiar wide-mouthed gaping when the parent bird is present. In the case of the baby it is a long way from that instinctive activity to the somewhat complicate and accurate handling of knife and fork which is required of the average adult in Western lands. But the method of taking food indulged in by the cultured adult is but the habitual modification of the fundamental food-taking instinct.

The fighting instinct is present in man, but it does not express itself as it does in the lower animals, at least, not often. Wild and vigorous animals make use of the tools which nature has given them. This instinct in man expresses itself in a very complicated management of mechanical agencies in the form of guns, explosive shells and gases, and is very far removed indeed from the elemental form. But all this is, after all, merely a modification of the original instinct.

From the theoretic standpoint it is a most interesting thing that confronts us here—the

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method of habit formation. How does the instinct become transformed? Why does it not maintain its original form? Or, to put the same question in a slightly more popular form, how does learning take place?

The learning process may best be discussed under two headings, "unconscious" and "conscious" learning. Unconscious learning is frequently referred to as "trial and error" learning. It is the type of learning which modifies very many of our movements, unknown to ourselves. We have been doing a certain familiar act for a long time, and suddenly wake up to find that we are doing it in a totally new way. We do not know at what point we changed the form of reaction. For instance, after we have been playing tennis for some time, we may find that the form of our serve has undergone a change. At first we rather laboriously and consciously aimed the racquet so that it would hit the ball at a certain point in the air. Time and time again we did it, until the conscious aim disappeared. Suddenly one day, months after, we found that we had acquired in serving a sweep and general form of movement which was very different.

from the clumsy and labored movement with which we began.

Such learning, as has been said, is called "trial and error" learning, and many examples similar to the above might be given. Suppose some one hands you one of those irritatingly attractive little puzzles consisting of a brass disc and a ring, or some complicated steel wire arrangement. The object is to remove the ring which is threaded through holes in a small brass disc, or to separate the star-shaped bit of metal from the steel loop which confines it. You take the puzzle and you work with it, turning it this way and that, putting the ring through this hole and the other, and finally, more or less to your surprise, the ring comes off the disc. You put it on again and perhaps are patient enough to take it off a second time. Repeat that process two or three, a dozen times, fifty times, and one finds that the method of removing the ring becomes perfectly automatic and the process extremely easy. But let a friend ask you how to do it and your answer will almost invariably be: "I can't tell you how to do it, but I can show you." A definite motor habit has been formed

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without there being very much conscious direction in its formation.

Interesting and accurate studies of this method of learning have been made of both animals and man. Perhaps the most interesting of them have come from the field of animal psychology. Animals will learn to make very involved reactions in just about the same way that the man learns to swing a tennis racquet or to handle the little puzzle mentioned above. Set a problem for a dog or a monkey or a white rat. It must be understood, of course, that when you set a problem for any of these animals it must be a dog or monkey or white rat problem. It goes without saying that a dog can't solve human problems. It can, however, solve problems at its own level. Perhaps the most familiar of these types of problems is known as the puzzle box problem.

A box is constructed of a size appropriate to the animal to be examined. The box is made of wire netting so that its interior is open to easy observation. It is closed in the front by a door having spring hinges. The door is fastened by means of a very simple lock, perhaps a peg

driven loosely into a hole, or by an ordinary thumb latch, or by a hook. In the box is placed some food, bread and milk for the rat or cat, banana or apple for a monkey, meat if it be a dog. The animal, moderately hungry, is placed in the room where this box is situated. The problem for the animal is to get the food. It is true that the conditions are artificial, but the problem is not, for it is exactly the kind of problem which faces all wild animals in the course of every-day life, and which becomes especially acute in any period of food scarcity. What does the animal do under these circumstances? He simply applies all the forms of instinctive activity which he has at his command to the box. The monkey swarms all over it, forces or tries to force his paw between the wires, bites at the corners, gnaws, pulls, twists. The dog does much the same thing, but is less richly equipped with various movements and less resourceful in his methods of attack than the monkey. The white rat in turn uses all the white rat methods of attacking the problem.

What happens? In the course of time, limited by chance or accident, the animal stumbles upon

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the peg which closes the door, pulls it, nozzles it, bites it, in some way or other removes it and the door opens. The animal immediately enters and gets the food. The next day the experiment is repeated, but from the standpoint of the animal there is an important modification of the situation, which essentially alters the reactions of the animal. The dog or rat naturally pays far more attention to that part of the box through which it entered the day before than it does to the rest of the box. And since its activity is so largely confined to the region of the door, it, of course, gets the door open much sooner than on the previous occasion. Day after day for six, eight or ten days the procedure is repeated, and a very marked decrease in the length of time required to open the door is noticed. This decrease of time stands in pretty direct proportion to the concentration of the activities of the animal upon the area immediately surrounding the lock. At the end of the training period whatever it may be—ten or fifteen days—the animal is capable of entering the room, going at once to the door, pulling the peg or lifting the latch and getting its food without wasting any time

whatsoever. The complexity of the lock which an animal may learn to open in this manner is surprising.

Now observe that the animal has not been taught tricks. It has simply been placed in the face of a certain situation and told, as it were, to solve its problem or starve. Animals must face just such situations in wild life, and there the choice between solution and starvation is a real one. There is reason for believing that the qualities of activity and persistence which enable one animal to solve the artificial problem in a time shorter than others of the same species would also enable that animal in wild life to obtain food when another had failed and died.

Conscious effort in learning does not introduce any really new methods. It speeds up the process described above. Instead of groping blindly for the methods of solving a problem, one obtains them by a systematic survey of the field of possibilities and a choice of that method which seems most available, or appears nearest at hand. That one method may be chosen rather than another is to be attributed to one's past experience. In the latter case the experience

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may have been acquired in the course of events, by reading, by conversation or in some more formally didactic way. The variety of choice possible to man as compared with the lower animals is the result of the richness of his experience, and of his superior power of retaining and imaging these.

It might be possible to state all education in terms of habit acquisition. It is necessary to consider expertness in this way. The expert is the person who has acquired a large group of habitual adjustments in his field. He differs from the tyro in regard to the proportion of the field which he can cover habitually. The fact of being able to handle operations in an habitual manner has certain definite and very valuable advantages. The practical effects of habit include the following.

First: the possession of habitual methods of adjustment decreases fatigue. Operations which are performed habitually are performed easily. The act which we are doing for the first time is difficult, other things being equal, it is less difficult the thousandth time. In any adjustment which is performed under habitual conditions,

the amount of energy expended is immensely less than in the case of the same operation performed for the first time.

In the second place, the habitual manner of performing an operation is more accurate than any other. It is much more accurate than the first non-habitual reaction of the same kind. In other words, if you wish to do a thing well you must do it habitually. Accuracy is to be found where there is a high degree of habit formation. This statement may seem novel and possibly untrue to many readers, but it does not require much reflection to discover its truth. Very many things which we do well we do habitually. Very many things which we do badly we do with a high degree of care. Take, for instance, such an ordinary motor activity as walking. Any adult, unless he be crippled, is capable of walking with ease and for long periods of time without thinking of it at all, even though it be necessary to alter the rate or the method of walking. One may walk around obstacles, climb steps, descend inclines and all with a small amount of conscious direction, or even with no such direction at all. But the same process of walking

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becomes clumsy and difficult if for any reason whatever our attentive care is exercised toward it. Let the reader for the first time walk across a stage or platform in front of five or six hundred people, and he will realize that there is more to walking than he had thought. The exerting of care in taking up and putting down the feet becomes for the first time a task, and the whole reaction is performed rather badly. In the same way, a person may fail to perform satisfactorily in public an involved series of movements, even though they have been thoroughly learned in private. A person who can play the piano or recite the verses of a poem perfectly if no one is listening, may find it extremely difficult to do so if a crowd of people observe his effort. Or if for any extraordinary reason a particular reaction suddenly assumes unusual importance it may at the same time assume unusual difficulty. In such cases what happens is that the performer has taken a group of movements which by the expenditure of great labor have been placed upon the habitual level, and has given them conscious direction. The result is disastrous and it necessarily

follows that such operations meet with a very small degree of success, and are done inaccurately.

Another example of the statement just made, is to be found in the control of certain movements. Practically all movements are made by two muscles, a flexor and an extensor, working on opposite sides of a bone lever. When a movement is made with careful attention, both the muscles concerned are more or less contracted, the lever being, as it were, swung between them as between two tensed cables. Such a method of moving requires the contraction of two muscles throughout the whole extent of the movement. When that same movement becomes habitual, it seems to be controlled by one muscle throughout the first third or so of its course, it swings freely throughout the middle third of the movement and is controlled by the opposing muscle throughout the last third of its course. Instead of there being two muscles tensed throughout the entire movement, as is the case when attention is present, there is one muscle tensed for two-thirds of the movement. That fatigue is decreased in this way, is obvious.

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Accuracy also is increased, because when the bone lever in question is handled by the two sets of muscles on the opposing sides the method of maintaining accuracy really consists in swinging the lever a little too far in one direction and then bringing it back too far in the other. For instance, a straight line drawn under conditions of attentive control, if with a hard pencil on a smooth surface, shows zigzags under a reading glass, while a straight line drawn with the same pencil, on the same surface under habitual conditions is made with a free swing and does not show zigzags under the glass.

The former type of movements are known as controlled movements, and the latter as ballistic. Because of the conditions mentioned, it is extremely difficult to forge successfully the signature of a man accustomed to writing his signature. The lines of the signature, when forged, must be drawn under conditions of attentive control, which means that they contain slight zigzags or irregularities, while the actual signature, being produced by ballistic movements, has no such zigzags. The forgery will, therefore, be easily detected. It is more easy to forge

the signature of the illiterate man who seldom writes his name. The reason for this is that when such a man does write his signature, he does it under conditions of attentive control, and it therefore presents the typical peculiarities of controlled movements.

The third practical value of habit is that the habitual movement may be successfully accomplished and at the same time the higher centers of the brain may be kept active along other lines, or kept free for such activity, if necessity for it should arise. In other words, habitual movements do not require all one's conscious intelligence. The habitual movements may be performed accurately and easily and at the same time the higher centers may be free to work upon other problems. The statement is sometimes made that a person cannot do two things at once. The statement is really untrue. A person may do two things at once if one of them is of an habitual nature.

The conditions of expertness have been stated in the preceding statement of the practical effects of habit. The man who can make a great variety of movements habitually, makes them

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easily and with accuracy and without becoming incapable of thinking along other lines while he is performing the habitual acts. Put in the positive instead of the negative, it is, for example, perfectly possible for a person to learn to read in public, and, while reading with expression, to think about something other than his reading. The ball player may make all the necessary muscular movements of catching or picking up a ball and throwing it, and be thinking of something else all the time, for instance the arrangement of the opposing players on the bases. In fact, it is the very *sine qua non* of expertness that he shall do this. If it takes a man's whole attentive consciousness to pick up a baseball, or to throw it after it is picked up, he will not be able to decide where to throw it until after it is picked up. The great expert is capable of making complicated and vigorous adjustments which a situation calls for, and while doing so to calmly decide what shall be his next movement.

The writer quite clearly remembers the first major operation he observed. His ideas of major operations had prepared him for a scene somewhat different from that which presented itself.

An operation had always seemed an extremely serious, not to say solemn, occasion, and he had expected to find an air of extreme exertion, of tense endeavor hanging over it. Instead the situation actually appeared rather carefree and easy. The operator was one of the really great surgeons of the United States. He went at his work (an abdominal section) with an almost off-hand ease and an enthusiasm which seemed careless. Now and then he even appeared to take his eyes away from his work to address the students who were gathered in the amphitheater about. The impression upon the mind of the unsophisticated young observer who was watching him was that he was being a little careless. But the apparent carelessness was certainly not that, it came from the fact that the work was being done in an habitual manner, that is, mechanically. As a matter of fact, the operation which the surgeon was performing was an operation which had probably been performed by him hundreds of times. His hands were making the most beautiful mechanical job of it. The effect of the habitual handling of the situation was that it was being done with a high degree of accuracy.

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From the operator's standpoint the work was requiring only a small amount of energy, hence fatigue was absent, and most important of all, the higher intellectual centers of the surgeon were comparatively free. Thus in case of the occurrence of a catastrophe of any kind, the surgeon would have opportunity and thought to handle the new situation even though it were imperative that the routine movement of the operation continue. In sharp and significant distinction from the easy habitual movements of the surgeon was the strained attention, the overwhelming care exercised by an interne who stood at his elbow and assisted him in some trifling details. To the interne the situation was still novel.

To sum up this portion of the discussion: if a person would become an expert in his field it is necessary that he reduce large parts of it to habitual performance. The expert differs from the tyro in regard to the amount he does by habit. The expert does by habit what the tyro or amateur does with a great deal of care, and the expert will do with care things which the amateur cannot dream even of attempting.

There is another side to the fact of habit which must not be neglected. Habit is the result of impressions produced by a certain situation, often repeated. But an impression, and a permanent one, is produced by even one experience of any kind. Hence, learning. We learn because we have to face puzzling situations or problems. Now the circumstances which affect us, the situations in which we are placed, even the books we read, the persons we meet and converse with, the schools we attend, the cities we live in—all leave impressions upon us, and it is vitally true, as said above, that *these impressions are permanent*. We can neither disregard nor destroy our past; that which has come into life cannot be forced out; that which we have seen has registered itself upon us; the words we have heard have engraved themselves upon permanent tablets of habit and memory. It is psychologically true that

“The moving finger writes, and having writ  
Moves on, nor all your piety nor wit  
Can lure it back to cancel half a line  
Nor all your tears wipe out a word of it.”

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Character is not constructed in a moment, but is the product or the result of one's experience, one's past. This statement must be understood in the light of what has been said in this and the preceding chapter, and also in connection with the chapter on Character Formation. The personality of John Smith differs from that of Thomas Jones because of two facts—first, because John Smith and Thomas Jones started life with different mechanisms, with different neural muscular equipments, and, second, because these two have lived in different environments, met different problems and experiences, and, because of their uneven equipments, have handled in different ways whatever similar situations have confronted them. Thereby they have of necessity acquired different opinions, different ambitions, different habits, and different sets of values.

## **CHAPTER THREE**

### **HABITS OF STUDY**

**A** STUDENT is a person who studies. He may or may not be registered in a school or college. Very many people who are not pupils of any teacher or school are yet students in every proper sense of the word. That is to say, they have an interest in certain material, and are attempting to obtain a thorough understanding and appreciation of that material. Much of what follows in this chapter and in the chapter immediately succeeding may seem to be applicable only to young people in school or college, but, as a matter of fact, it applies with equal truth to the efforts of anyone who is trying to master or comprehend any serious material in any field. All men and women working seriously with any subject which requires any effort at all, other than manual, must be students to some extent. Such people must know something of the principles involved in the work being done. Nine

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times out of ten there is considerable memorization to be accomplished. Only the rare person who entirely lacks ambition for advancement can get along without any study whatsoever. What is true of the methods of studying in one field is also true, with certain obvious changes, of the methods of studying in all others. What follows applies as truly to the young lawyer, stenographer, artisan or housekeeper as it does to the pupil in school or college.

For the person who has ambition along studious lines it is first of all necessary that he possess some habits of regular study. If you are really serious in your attitude toward the opportunities which school, college or your profession can furnish you, it is absolutely necessary, if you would work with effect and economy, to have some perfectly definite ways and methods of studying. The advantages of having habits of study are precisely the advantages of habit formation which we find anywhere else.

These advantages consist in the acquisition of ease in studying and in economy of effort. Studying may actually be made easy by habit. The person who studies regularly over a long

period of time discovers that the same amount of painstaking effort will accomplish more and more as the time goes on. He acquires facility in study. The rewards of his studious efforts increase out of all proportion to the labor expended as the process becomes habitual.

Further, accuracy in study is increased by habitual regularity. That is to say, if one has the habit of studying in a certain definite way, in a certain definite place, at certain definite times, more will be gotten out of the material under investigation in a stated time than if one studies in desultory methods and at accidentally chosen times and places. If one has formed a pretty persistent habit of application at certain times the act of applying one's self becomes easier and more productive the longer that regularity is maintained, and the result will be that the student who works regularly and according to some schedule will obtain more from his books in the same time and with the same expenditure of energy than the one who works sporadically.

Perhaps the hardest thing about studying is in beginning the period. It is never absolutely easy to break off some pleasant conversation or

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reading and settle down to a period of hard study, but I think that this fact of commencing is made easier if there be a certain definite time at which one habitually starts studying. When that time comes one will find that the organism is already in the study attitude, as it were, has already started to work.

The importance of routine and regularity in study hours cannot be overestimated. It is of more significance than the amount of time put in. With the sole exception of the possession of unusual ability it is the most important factor in determining whether or not a certain person will be eminently successful in his student or professional life.

Therefore it is wise to emphasize strongly and clearly that it is extremely valuable for a student to have a regular time and a regular place for study.

When it comes to the suggestion of certain definite habits which it is well to form, it must be recognized that the details of such habits are more or less a matter of opinion or of individual variation. Certain particular forms of study habit may be more beneficial for one man than

for another. What is now to be said about particular study habits is said with this reservation in mind.

Three factors of importance in connection with study must be considered. These are the matters of the place of study, of the times for study, and the duration and intensity of the actual study period.

It is very much worth one's while to expend some thought upon the arrangements, or apparatus, for studying. The appointments which are necessary generally consist of a desk or table, a chair, properly arranged lights, writing materials and possibly a few other things. The desk should be of a convenient height, adapted to the stature of the person working at it, sufficiently high to bring a book placed upon it within easy accommodation range of the eyes without undue bending of the back or hunching of the shoulders. The chair should be straight-backed, moderately hard, and of a height which allows the feet to rest upon the floor, and gives sufficient elbow room for writing. Of course the heights of the chair and desk should be accurately correlated.

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The lighting of a study table is of immense importance. The first rule to remember is that there must not be any great spot or area of bright light within the visual field. The source of illumination should, if possible, be placed outside the visual range. If it must be placed within the field of vision, it should be shaded or dispersed by a green colored or a frosted glass globe. It is much better, however, to have the source of light placed outside the range of the eyes and reflected into the visual field. It does not need to be said that of all lights for reading sunlight is the best, and other lights are good just in so far as they resemble sunlight.

In the matter of choosing the time for studying, individual preferences and conditions of life must play a large part. For most students the early evening is probably the most convenient time. For many men the late evening or even late at night is very good. The writer has known a man to successfully pursue the plan of going to sleep immediately after the evening meal, awakening at ten or eleven and studying from then on until breakfast time. For most persons such an arrangement would be impos-

sible. In this particular case it worked very well. It follows that very little advice can be given as to time. It must suffice to say that as far as possible the time of study should be the same on different days. Very few people can study with much success who simply use desultory odds and ends of time for it. William James has written something to the effect that "some people get all the work done they ever do in the interstices of their mind's wanderings." Study or work performed in such a manner will not be greatly successful. It will just "get by" at the best, and cannot possibly produce the high class man in any business or profession.

The duration of the study period may be treated a little dogmatically. Shorter periods of study are more productive than long periods. That is to say, if two hours are to be put upon a certain kind of study more will be gotten out of the time and energy expended if there be four periods of thirty minutes each, with short rests at the end of each period, than if there be one long drawn out period of one hundred and twenty minutes. And the four periods will be more produc-

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tive than two of one hour each. It may be recommended to students, particularly to young students, that some such arrangement as this be made of their study time. Let the student who expects to spend two or three hours in study arrange that at the end of every thirty minutes there be a break. This break need not be more than two or three minutes, but it should be a complete break. The person should change the position of the body, get up, walk around, alter the chain of thought, and ease completely any cramped attitude of the body. After spending a long time in one position and in one pursuit, the efficiency of the organism, for receiving the material being studied, decreases very much. And relaxation, when it comes, should be complete, it is not worth while to half relax; the resting should be thorough, the work should be dismissed from the mind entirely.

This leads us to the most important rule of study with which the writer is familiar. It may be stated in a few words, and is simply this: "Know when you are studying."<sup>1</sup> Many stu-

<sup>1</sup> The writer is indebted for this succinct statement to Professor R. H. Stetson, of Oberlin College.

dents waste a great deal of their time in an attitude which is neither hard work nor complete rest, but half and half. This satisfies neither of the desired conditions, not being successful study on one hand nor efficient rest on the other. A person cannot successfully study reclining in a morris chair nor lying on his back or side on a bed. If the man is tired, let him spend ten or fifteen minutes on the bed or in the morris chair, completely relaxing; the rest of the available time can then be put in in the study chair, intently studying. An hour spent in half study and half rest will produce less in the way of permanent results than would the same hour were half of it spent in complete relaxation on the couch and the other half in genuine study. Furthermore, at the end of an hour spent one-half in study and one-half in complete rest, the person will be less tired than if the whole hour had been spent in an attempt to study and rest at the same time.

There is a wide difference of opinion as to the method and value of taking notes, and it is not probable that all the remarks made here will meet with anything like universal approbation.

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It has been the observation of the writer through several years of teaching that the average student takes too many notes. It is comparatively easy for a student to transform himself into a kind of auditory-chirographic mechanism, and to record with a pen the material that is heard. But at the same time the student may not really be getting very much of what is being said. Notes which are taken in this way may not leave a very lasting impression upon the mind. The work has all to be studied afresh from the notes and these may or may not be accurate. Objections of the same kind may be made to the occasionally seen practice of taking complete stenographic notes. Not only does such work have to be transcribed but it all has to be studied afresh when it is transcribed. The point is that in such cases the student concerned has gotten very little of the material while it was being given, having used all his endeavor in making a written record of what was said in class. Notes of lectures, if made at all, should be analytic and systematic, and not synoptic. Often very little that is of value is obtained by attempting to synopsize a discussion or a lec-

ture, meaning by synopsis simply an attenuated version. But it may often be worth while to analyze the lecture, and to record its logical development. Of course it is assumed here that there are specific divisions and a systematic development of the subject by the lecturer. It must be admitted, however, that lectures are occasionally offered, even by eminent men, which seem to lack both logic and system.

Notes that are made in class should be short, systematic, and, above all, thoughtful. A person who spends ten per cent of his time in the class-room in taking notes and the other ninety per cent in thinking is in a better case than the student who reverses the proportion. Try to have the work in your note book so arranged that in referring to particular parts of it you will be able to use a reasoning or thinking method, rather than a memory method.

A different situation is presented when the case is one of making notes from reading. To some extent it is true that "*legire sine calumo est dormire.*" A careful recording of the essence of what is read is of value in fixing that material in memory and in estimating its value.

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But here again it is true that such notes should be analytic rather than synoptic.

Now and then it happens, for one reason or another, for which the student may or may not be responsible, that a particular subject has not been gotten in shape for examination and it becomes necessary for that student to spend a short space of time in very intense work, in "cramming" his subject. That practice, while generally reprehensible, is not entirely devoid of good points. It is of some value to the student to have had the experience of being forced to cover a great deal of work in a very short time. It means that he has to analyze and then absorb all the material of the course without outside help. Now in professional life it sometimes happens that something akin to "cramming" is the only practicable method of performing a particular task. It is probable that such a method must now and then be used by the lawyer in writing a brief, by the lecturer or preacher in preparing an address of which he has had very short notice, or by the physician in mastering the details of the literature of some unusual or obscure complication. On the whole, however, "cramming"

is not an advisable way of preparing work, and there seems to be little doubt that material which is obtained in such a way is not really mastered, and is not retained for any great length of time.

In preparing for examination, one rule may be stated. Neglect the interesting subject. Prepare yourself first in the subjects which you dislike and find most difficult. There will always be time at the end for the things which are easy and pleasant. For obvious reasons it is wise, when it comes to the actual writing of the examination paper, to answer the easiest questions first, then the harder ones. Many a student has failed in an examination because he spent too large a proportion of his time upon a question which he did not succeed after all in answering satisfactorily.

If one's habits of study have not produced satisfactory results it is advisable to arrange new ones. The following familiar advice is adapted from the writing of William James. First, launch your new habits with energy; second, seek an early opportunity of putting them into practice, and, third, allow no exceptions

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whatever. To these a fourth rule may be added, namely, don't try to do too much, don't make your regimen too strenuous, outline a reasonable program for yourself.

The application of regular and persistent habits of study will have satisfactory results, beyond all doubt. In support of this statement note the following paragraph, again a quotation from James:

“As we become permanent drunkards by so many separate drinks, so we become saints in the moral, and authorities and experts in the practical and scientific spheres, by so many separate acts and hours of work. Let no youth have any anxiety about the upshot of his education, whatever the line of it may be. If he keep faithfully busy each hour of the working day, he may leave the final result to itself. He can with perfect certainty count on waking up some fine morning to find himself one of the competent ones of his generation, in whatever pursuit he may have singled out.”<sup>2</sup>

<sup>2</sup> James, William, “Principles of Psychology,” Vol. I, p. 127.

## CHAPTER FOUR

### **REMEMBERING AND FORGETTING**

**M**NEMOSYNE, according to the Greek mythology, was the mother of the muses. From her came all that was creative and valuable in art and literature, science and history. Whatever one may think of the mythology of the Greeks, there can be no doubt as to the accuracy of their psychology in this respect. It would be impossible to overestimate the importance of the part played by memory in life. Upon memory depends not only the production of works of art and literature, but, in fact, all continuity of effort and of thought. The memory function is the basis of originality, paradoxical as this may seem, and it may even be said that, other things being equal, the person with the most impressionable and retentive memory is the most capable and intelligent person. The query may even be made as to whether memory

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does not constitute the very essence of personality.

For the student, certainly, memory is of paramount importance. Not that training in school or college should be primarily a training in memory but that in so far as it is a training in reasoning, it is thereby to a great extent a training in the handling of material which has been memorized. For reasoning consists in the arranging of ideas toward a certain end, to solve a certain problem; and ideas may be understood as the mass product given us by various experiences, which are alike in essentials but which differ in details. And of course such mass productions or ideas are dependent upon the memory function for their very existence.

There are three parts of the memory process. There is first of all the fact of retention, physiological in nature. In some way experience engraves itself upon the human organism. One cannot go through the events of even the most placid day without having these events affect in some way or other the organism as a whole and probably the nervous system in particular. This fact has been enlarged upon in the chapter on

“Habit.” It may do to sum up that discussion here in the word that the human organism is “wax to receive and marble to retain.” We do not know exactly how the organism is modified by experience but we do know that in some way or other experience leaves upon us an impress which is to all intents and purposes permanent.

The second part of the memory process is known as recall. When an organism has been modified by experience it is capable of producing a replica of that experience at some later time. It is really not accurate to say that the experience is reproduced, that is not exactly what occurs—the memory image is not the original experience occurring a second time—it is an imitation or copy of the first experience, having certain definite characteristics of its own, and, under ordinary circumstances, is incapable of being mistaken for an original experience. Recall is, therefore, the act of becoming conscious of material which has been retained.

Perhaps the first thing to emphasize about recall depends upon the fact that memories are retained, and recalled, in closely associated groups or chains. Our past is not memorized in

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the form of a coordinated map, which one can examine and on which every event is recorded in its proper place; the fact is, rather, that our memories are arranged in what may be called "chains." These chains cross one another, may even be tangled, but there is no systematic cross-reference between them. I may, for instance, have learned to play a certain game during a period of weeks in which I was reading the works of a certain author. Now, it is perfectly possible for me to recall the incidents of my learning to play that game, to review my progress in the acquisition of skill, to remember one or two days on which it may have happened that I played particularly well, to remember certain definite failures. It is also possible for me to remember the sequence in which the books of the particular author were read, to know how I delighted in one more than in others, to understand the connection between the books, perhaps to remember the dates, the actual days, on which the several books were finished. But it will probably be true that I will not be able to remember what book I was reading on the day I played a particular game, itself easily remem-

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bered. In other words, while I may have these two series of coincident memories and know both of them rather accurately, there may be no cross-reference between the series at all. A student may be taking several courses at once in college and may know the content and order of development of both of these courses perfectly well, but may not remember what he was studying in course "A" at the time he read a certain poem in course "B." Of course in many cases it will happen that events in two coincident chains will become connected. One may have been driven from a game of tennis by the heat of the day and have then occupied himself by reading a book. That may establish a connection between the two chains so that a recall of one will suggest the other. If there is no such connection as this, the two memory chains may remain for ever separate, despite the synchronism of their origin.

If one wishes to find or recall any detail of material which is contained in one of these chains, it is necessary, as it were, to get hold of the end of the chain in which it is contained, and bring the whole chain into consciousness. The fact that on occasion we are unable to

recall material which we are perfectly sure has been retained is due to simple inability to get hold of the correct chain, and this inability is often caused by the fact that failure to recall places us in an embarrassing or difficult situation—and that our attention is directed chiefly toward the embarrassment. Take the not uncommon case of suddenly finding oneself unable to recall the name of a person with whom one is well acquainted. The situation is embarrassing because the friend whose name is forgotten is apt to be somewhat displeased when he learns of the lapse of memory. If one in his search for the chain that contains the name goes carefully over the experiences shared with this friend, where he was first met, where he lives, his business, in general the details of his life as far as one knows them, there is a great probability that the name sought after will turn up. It is contained somewhere in that chain. But often, instead of pursuing some such systematic search, one becomes so attentive to the humiliation or embarrassment of the situation that it is out of the question to lay hold of the correct memory chain. The young man who has forgotten the

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name of the girl with whom he is dancing and who is trying desperately to remember it is really concerning himself chiefly with the situation which is bound to occur when the young lady finds out that he does not know what her name is. He realizes that he will have to call her by some definite cognomen before long; he understands that she will probably be much displeased if she comes to realize his forgetfulness; he sees more or less dire consequences following, and because he is thinking along such lines, he is unable to locate her name, the name being contained in an entirely different memory chain.

It sometimes becomes necessary to assist a person to remember materials which they have forgotten, or occasionally to prove to a person that they have not forgotten something which they claim they have. In such cases the procedure which is followed has for its purpose a systematic search for memory chains. A list of words is prepared, being chosen in such a way that it covers a very wide field indeed, and the person is then asked to reply to each of these words as they are read to him with the first word which occurs. The length of time between the

reading of the "stimulus word" and the giving of the "reaction word" in reply is carefully measured. It is soon established that for any particular person there is a rather constant reaction-time. If he then be given a stimulus word which has a direct connection with the material which he is supposed to have concealed or forgotten, either one of two things may occur: the reaction word may be very significant in nature, or the reaction time may be abnormally long. Occasionally both these results will appear.

Some time ago the writer had the opportunity of interviewing a young girl who was brought to him by her mother. The girl, who was about fourteen or fifteen years of age, told a rather curious story. She was employed by a large downtown store in one of the eastern American cities. Her work ordinarily ceased at six o'clock or thereabouts. On a particular night she left work at the regular time and, according to her story, proceeded directly home. The significant fact was that it was two o'clock in the morning when she arrived home. She claimed to be utterly unable to account for the length of

time it took for her to reach home. On her ordinary route home she was forced to pass one of the large city parks situated in a somewhat outlying part of the city. She admitted, on questioning, that she had stepped into this park and sat down on a bench, but had stayed only a few minutes, and insisted that no one had spoken to her. At two o'clock she was found by her mother in a half-fainting condition on the front steps.

The problem was to determine whether she was telling the truth, whether a period of amnesia had actually intervened between six in the evening and two in the morning, or whether something had occurred which the girl was attempting to conceal.

Simple questioning having failed completely, she was asked to submit to an association test. A long list of words was prepared and she was asked to respond to them one by one. She did this with a good grace and established a normal reaction time of approximately one and two-fifths seconds. Throughout the list of one hundred words to which she responded there was only one unusual association, that was to the

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word "floor,"" to which she responded after eleven seconds with the word "dance." The investigation was interrupted more or less rudely at this point partly by the girl declining to go any further, and partly by the fact that her mother decided that the investigation was futile. The probability was that the answer to the problem would have been found to be somewhere connected with the only too obviously associated words "dance" and "floor."

A very interesting example of the efficacy of this method of determining the presence of memory material which a person has claimed to have forgotten is to be found in the following incident. In the fall of 1909 there was admitted to the Danvers (Mass.) State Hospital a young man of twenty-one who, according to the physicians' certificate was an epileptic, who had had on several occasions periods of amnesia, and who, apparently in an epileptic twilight condition,—aggravated by alcoholic excess,—had committed robbery. The youth, in a somewhat intoxicated condition, had entered a grocery store kept by an old man, and, after staying until the store closed, insisted on accompanying the old man

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some distance along the street. Then in a quiet part of town he had turned upon the groceryman, knocked him down and robbed him of two dollars. Because of his age the old man's injuries proved quite severe. The youth was soon after arrested, but managed to convince the court that he had complete amnesia for all the events of the evening in question. He was then committed to Danvers.

At Danvers the youth came under the attention of the Assistant Physician who came to doubt the fact of his amnesia, and decided to submit him to an association test. The results of this test are of sufficient interest to quote.

"The first six words were of indifferent character and were within the limit of normal association time. The first test word having some connection with the crime was the word 'grocery.' The time of association was immediately doubled and the association words were 'you said grocery?—fire.' The association for the test words 'old man' was somewhat retarded—five seconds—and was insignificant. The next five indifferent words showed the normal association time of three seconds. To the next test

word, 'murder,' the time of association was shorter than his usual time of reaction, and the word 'help' was given with a sharp intonation, as though he were in reality calling for help. To the word 'liquor' the association time was normal, the association word being 'fire.' To the word 'memory,' after twenty-two seconds, he answered 'house.' Four indifferent words followed with a somewhat increased time reaction. To the test words 'robber' and 'dollar bill' the time was fairly normal and the association words insignificant. To the test word 'imagination' after five seconds, he gave the word 'water.' The association to 'insane' and 'guilty' was 'no, sir.' . . . To the name of the assailed man the association time was two seconds and the association word was the man's Christian name. To the sharply spoken name of the street where the assault happened, the association time was extremely short, for him, being hardly one second, 'yes sir.' . . . To the word 'blow' after three seconds, 'with the right hand.' To the word 'fake' after fourteen seconds, 'time.'

"After ten minutes I repeated the same test words, having in the meantime made no refer-

ence whatever in our conversation to my suspicion regarding his simulation. . . . During this ten minutes' time the patient smiled often, seemed to be thinking hard and acted as though he were feeling quite uncomfortable, without, however, making any comments. To the first test word given him, 'grocery' he reacted after eight seconds, with the word 'time.' To the word 'murder,' up to nine seconds, 'no, sir.' To the word 'memory' after three seconds, again, 'Yes, sir.' To 'dollar bill,' after two seconds, 'memory.' To 'King Street,' after eleven seconds, 'Gr——' (name of the town). To 'left temple,' after eight seconds, 'bottle.' To 'blow,' after two seconds, the words 'no, sir.' ”<sup>1</sup>

The experiment proved to the physician that the culprit showed no signs whatever of amnesia, and he was accused of having simulated his forgetfulness entirely. He finally answered, "I admit I faked from the beginning." His case came on trial soon after, and he was committed to the Concord Reformatory on an indefinite sentence.

<sup>1</sup> Katzen-Ellenbogen, E. W., "The Detection of a Case of Simulation of Insanity by Means of Association Tests," *Jour. of Abnormal Psych.*, Vol. VI, 1911-1912, p. 19.

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There is a third part of the memory process. It is not sufficient for an experience to be retained and recalled. It must also be recognized as a memory experience. It is perfectly possible for material to be recalled and not recognized, that is to say, for a memory image to masquerade as a totally new idea. It probably happens fairly often that an ambitious young author will mistake a memory of a story read long before for an original plot, and he may even go so far as to use it as an original production. Perhaps it would not be too much to say that most so-called "plagiarism" is of this order. The writer knows of a particular case in which a man working in the graduate school of a university upon his thesis for the doctorate, actually reproduced several pages almost verbatim of a thesis by another man already published upon a very similar topic. This was done with complete lack of recognition of the fact that such pages were really quotations and not original work at all. In fact, the man who did this was only too glad to recognize his error when it was brought to his attention.

It is also possible for recognition to occur

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without recall. In other words, a person may remember something which has not happened. A study of testimony on the witness stand will furnish many examples of this. People are willing in all sincerity to swear to having witnessed events which not only did not occur but which, in the nature of the case, may have been impossible. Such testimony is made under oath, but there is no doubt that people making it may be sincere.

When we pass on to a more practical aspect of the question of memory, we find that there are two or three rather important laws which apply to the process of memorization. These may be best discussed under four heads.

First: to memorize material it ordinarily helps very much if the material be thoroughly understood. If it is analyzed, arranged in systematic form, that in itself may produce a rather persistent effect upon memory. A man may adopt a system of mental "filing," and material which can be completely analyzed is, by the act of analysis, readily "filed" in the mental filing cases. But please notice that it is the fact of making the analysis which is of importance. The

memorizing of the material after it is analyzed helps less and requires far more endeavor. A very brilliant young man who attended one of our Northern universities some dozen years ago is remembered by his class mates, among other things, for his industry and power of analysis. The writer remembers particularly a huge outline which this young man made of the classification of coal-tar derivatives. This chart was drawn upon a large sheet of paper made by pasting together half a dozen sheets of ordinary drawing paper. The surface of this immense sheet was completely covered with fine writing, the whole thing being very carefully analyzed and systematically arranged. In the making of this outline its author impressed the material which it contained upon his memory, and it goes without saying that he took a high mark in that particular study. It happened, unfortunately, that his younger brother inherited this chart. For him the situation was different from that which the older brother had faced. He had no analysis to make. He had simply a great deal of memorization to do. Though he labored at this task very hard the result was not startlingly

successful, for in spite of the possession of high ability he did not take a good mark in this subject at all.

In the second place, even after a thorough analyzing of material into its component parts, there is apt to be a certain amount of routine memorizing necessary in practically all subjects. Routine memory is memory by main force, and its success rests primarily upon repetition. Other things being equal, the more often material is repeated the better it will be remembered. It pays to spread such repetitions over several days; that is, if one is to make a score of repetitions, it is better to make ten repetitions on two succeeding days than twenty repetitions on one day. Further, it is well that the material should be learned in rather large quantities, or units. By learning long units at once correct associations are formed, and the whole learning process seems to take place with greater economy of effort and time than if the units used were smaller. If the material to be learned be cast into rhythmic form, the effect is beneficial, and rapid repetitions are, on the whole, better than slow ones.

Third: the problem of memorizing material depends very much upon the feeling tone which is present at the time of the memorization or at the time at which the facts to be memorized occur. It may be stated as a general rule that anything very pleasant or very unpleasant is almost sure to be memorized. If one glances back over his life he will find that those facts which most readily recur to memory, the mountain tops of experience, as it were, are all, without exception, connected with emotional experience of one kind or another. On the other hand, any material which is approached with a feeling of ennui is almost incapable of being memorized; it is necessary to have some sort of feeling or emotion about it. Of course it is most advantageous for a student to really enjoy the subject-matter concerned, but it is probably good psychology for a teacher, if he is unable to make certain material pleasant for his pupils, to make it as unpleasant as possible; anything is better than that it be perfectly colorless.

In the fourth place, a few practical hints regarding the actual memory process are in order.

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Other things being equal, memorization is aided by:

A. **Visualization.** It seems to be true of the majority of people that they think in terms of visual imagery more often than in any other sense mode. For such people, material which has to be memorized should be arranged in the form of mental pictures if possible. It is probably definitely established that if facts are once pictured, clearly visualized with some detail, they are apt to stick in the memory thereafter. Therefore, it pays to spend a little time upon arrangement of the details of this visual image or mental picture. Perhaps it goes without saying that certain kinds of material lend themselves to treatment of this kind more readily than other kinds. The remembering of faces and the names attaching to them, the remembering of the names or contents of books, or paragraphs, or verses, all these are readily visualized. Foreign language paradigms, mathematical or chemical formulæ, bare dates in history, are not so easily visualized. They must be clothed with some kind of illustrative matter before one can remember them in this way.

**B. Exaggeration.** Exaggeration, even to the point of caricature, is a great aid to the memory process. The asymmetrical enlargement of one detail, for instance, of an incident in a certain person's past, of one of the same person's characteristics, a trick of speech or walking, an individual way of swinging the hands or handling a pen, a peculiarity of facial or bodily structure will enable one to remember that person easily.

**C. Association.** The reference here is to carefully, even laboriously constructed, systems of association, especially unusual associations. One may have to go all round Robin Hood's barn to create an association, but it is worth while to do so, because it usually means that the material so associated will stick in memory thenceforth, and remain accessible when needed.

The commercial methods for improving memory so widely advertised to-day consist largely in filing and recording methods. In practically every case there is some elaborate outline or skeleton which must be memorized. This outline once memorized, associations are established with material which one wishes to retain, and in this way such material is filed in memory in the

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order determined by the outline. Beyond doubt, some value attaches to certain of these systems, and any person who is troubled with an embarrassing degree of inability to remember may find that it is worth the trouble involved to procure and master one of these methods.

The subject of memory is not completed without a reference to the facts of forgetting. There are fundamentally two forms of forgetting. There is a form which may be understood as analogous to natural decay. Material simply passes from memory in a way similar to that in which organic matter in time crumbles to dust. But this analogy can't be carried too far. In the case of memory, decay is extremely rapid at first, as much as from sixty to eighty per cent of certain forms of memory material being capable of being lost in the first twenty-four hours. But the rate of decay becomes progressively slower, and even after very long periods of time a certain proportion of anything which has once been memorized may be shown to be still present.

The second form of forgetting is of an entirely different type and is based upon entirely

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different principles. It is pathological in nature, and in its extreme forms is known by the name of "amnesia." In these more serious forms, pathological forgetting becomes a complete disappearance of whole chains of memory. Again it must be emphasized that our memories are not complete cross-sections of our lives. They occur in chains, in groups. One of these groups, for reasons which are not well understood, may entirely drop out. A person may lose all memory of his experiences with certain people or certain events. It does not often happen that amnesia is complete, that a person who suffers from an attack of pathological forgetfulness forgets everything. He forgets some things only, usually something which it is of extreme importance for him to remember, though not quite so important as those things he does not forget. He may forget his own name, his wife's name, or even the fact that he is married. He may not remember his profession, or his ambitions, but he will almost certainly remember his language and the methods of performing ordinary feats having to do with the tasks of daily life. He knows, in a word, how to dress himself, how to

handle a knife and fork, how to walk and speak. He knows that one pays to ride on a street car or a train. It is not a complete section gone out of the stream of memory, it is a disappearance of certain chains which wind in and out among the other chains of memory.

In the early morning of a certain day in November, 1913, a certain gentleman who had occupied an important place in a prominent educational institution in New York found himself on a train, and gradually awoke to the realization that he had not the slightest idea where he was going, what he was going to do when he arrived at his destination, nor even what his name and profession were. These later he found out by examining letters in his pocket. These revealed his name, and the fact that he was evidently an assistant professor in Teachers' College, Columbia University. It also appeared that he was considering an offer from Ohio State University. Whether he had accepted this offer or not, he did not know. It was also easy for him to ascertain that the train on which he rode was en route to Detroit. The rest of his antecedents were completely missing. Arriving at

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Detroit he decided to take an electric car to Toledo. It is significant that he knew that Toledo was within easy reach of Detroit. From Toledo he started out walking, hoping that several days of this would restore his evanescent memory. He understood fairly well what was the matter with him. He knew what amnesia was, and felt certain that he was suffering from it. He was able to recall many facts from his retained store of knowledge, for instance the appearance of Columbia University buildings, the view from Morningside Heights, and the appearance of the Bay of Naples and the Piazza San Marco in Venice. His image of the Acropolis was vague. Later he was to find out that he had never seen the Acropolis, having never been in Athens, and knew it only from pictures. In a similar way he was able to construct a lecture on the French Revolution, without finding himself at a loss for a single name or date. But of his own personal and professional past he could recall nothing. He convinced himself that he had had nothing to do with farming, even the harnessing of a horse was mysterious to him, nor with any manual labor. Yet circumstances, the

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necessity of earning a living, forced him to plunge into the world of manual labor, and live by his hands and the sweat of his brow. His adventures were amazing, before the day came, over two years later, when, while engaged in scrubbing the floor of the dining-room of a hotel in Colorado Springs, recollection suddenly returned, not all at once, but enough to make certain the complete recovery which soon followed.<sup>2</sup>

The interesting and characteristic thing about this example of amnesia is the way in which only certain chains of memory were lost. Much was forgotten, much remained. Why he should forget his business relationships, but remember how to play chess, is completely inexplicable to modern psychology. We do not yet know enough of the mechanism of memory to begin to explain how such things happen.

The milder forms of pathological forgetfulness are not unlike a slight degree of amnesia. But the distinction is not only, nor chiefly, one of degree. It lies in the nature of the material which disappears. It seems to be forgotten for

<sup>2</sup> Lavell, C. F., "The Man Who Lost Himself," *Atlantic Monthly*, Nov., 1917.

a reason, there are more or less logical principles underlying this process of selective elimination. This form of forgetting may be termed "purposive forgetting." There are certain facts which it is unpleasant or inconvenient to remember. They may have to do with an accident, a bad fright, or some catastrophic disturbance of the emotional life. Under certain conditions, not entirely unconnected with other kinds of mental disturbance, such facts may disappear from memory. A certain color, a certain tone, a person having certain physical characteristics may produce emotional upheaval in a particular man, though he does not know why. The reason lies ordinarily in some past experience connected with a fact of the same kind as that which disturbs him. But there is no recollection of this past experience. One may forget the name of a person who bores or irritates him. A task which is unpleasant or monotonous, without being excessively so, is apt to be forgotten. One may forget to attend a boresome committee meeting, but one is less likely to forget an appointment with the dentist. It has been said that the reason the proverbial husband forgets to mail his wife's

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letters is that in his heart he does not feel that it makes a great deal of difference whether they are mailed promptly or not.

Much more might be written about memory, but this is not the place to enlarge further on the subject. Memory is really the center of personality, and if its processes are ever reduced to exact laws, we will be in a fair way to understand the nature of personality itself.

## CHAPTER FIVE

### ATTENTION AND INTEREST

THE human organism is a selective mechanism of no mean efficiency by virtue of the sensory apparatus with which it is equipped. The surface of the body and some areas of the organism not on the surface are thickly implanted with small cells of highly specialized form, having the function of responding in individual ways when they are affected by particular forms of physical or chemical activity. Into a description of the mechanism whereby this is accomplished there is no time to go here. The point to be emphasized in this connection is that each variety of these so-called "receptors" is capable of being actuated only by very definite forms of physical or chemical force. There are certain forms of sensory receptive cells which respond when they are touched by ether waves vibrating at rates varying from about four hundred and fifty billion per

second to about seven hundred and ninety billion per second. These are the rods and cones of the retina. Furthermore, there is some evidence that particular wave lengths stimulate certain of these receptors and other wave lengths certain others. The receptors for hearing are set into operation when they are stimulated by air waves of not less than sixteen per second and not greater than twenty thousand per second at the most. There are some cells which are actuated by temperatures under blood heat, and others which are actuated by temperatures which are at least a degree or two above blood heat. Certain receptors for taste are actuated by acids, others by sweet solutions, by salt or bitter solutions. It is probable that there are several varieties of receptors for smell, and that the gas that actuates one will not actuate the others.

There are many physical disturbances, however, which actuate no receptors, and of which we remain forever directly unconscious. We have, for instance, no direct conscious apprehension of X-rays, nor of the various radioactive emanations. We have no receptive organs

for these, and they simply pass us by. We know of their existence only by roundabout methods of calculation.

Not only is the animal organism a selective apparatus in the sense I have suggested, but from another standpoint also it may be seen to be selective in its function. Among the particular forms of experience which various forms of stimulus may offer us, we are able to pick and choose. We are not conscious at any time of everything of which, theoretically, we might be conscious. Everything that falls within our visual field is not seen, nor is everything audible at a certain moment heard. The man who stands beside me may see a different group of objects or hear a different sort of sound from that which I see or hear. In fact, the man who stands beside me, no matter how close, and myself, *must* receive different groups of sensory experiences.

The fact of enforced interest is known as "attention." Primarily, attention is selection. There is so much going on, "the world is so full of a number of things," that it is impossible for the quickest one among us to take cognizance of

them all. And the selection which different people make among possible objects of which they might be conscious differs with the person. The purpose of this chapter is to discuss the principles which determine of just what objects we shall be conscious. Why do I attend to a certain class of objects, and the man beside me to an entirely different class? Why do I, when I visit an art gallery or a museum, see one thing and my comrade another? Why am I impressed by certain faces, while my friend fails to notice them at all? Why, in a word, is my world different not only from my neighbor's but from the world in which everyone else lives? For, in a certain sense, it is true that each of us lives to himself alone, and that we see and hear and appreciate and value differently. We hate and love different things, we attend to different things.

Before attempting any description of the factors controlling attention, it is necessary to refer to certain motor phenomena which are the very essence of the attentive process itself. There are three forms of motor adjustment which constitute the movement side of the attention proc-

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ess. First of all, there is adjustment of the particular sense organs concerned when one desires to attend a particular object, or when factors in an object compel attention. If it be a matter of visual attention, the eyes will converge upon the object, if it be not too distant, and the lens will accommodate, that is to say, will increase or decrease appropriately its normal focal length. If it is a matter of auditory attention, in the case of animals having mobile ears, the pinnæ of the ears will turn toward the source of sound. If, as in the case of man, the ears themselves cannot be independently moved, the head will be turned so that the sound waves will impress the ears most strongly. If it is a matter of smell, one instinctively sniffs, inhales strongly and suddenly so as to force the gas over the olfactory surfaces. If a matter of taste the substance is thoroughly dissolved in the saliva, and allowed to wet the tongue, the inside of the cheeks, and, to some extent, the lips.

In the second place there is a general tensing of muscle. A person who is attending to any one thing very intently is in a state of more or less general rigidity. If a wild animal, to whom

your presence is unknown, trots through a forest glade in front of you and you whistle sharply to it, it may stop dead for an instant. If one were able to examine it at this moment, it probably would be found that its muscles are all tensed. The person who is startled by some real or fancied noise or object, and who, therefore, is attending very carefully indeed, contracts nearly all the voluntary muscles. The resulting rigidity constitutes the third motor phenomenon connected with attention, cessation of general movement. The startled person or wild animal stops dead for a very brief instant. Of the same order as this momentary cessation is the death feint of the opossum or the fox. The opossum "playing dead" is, of course, not deliberately acting or playing a game. He is simply too frightened to move. And among human beings the toll of death each year from automobiles and street cars is increased very much by this instinctive stopping of all movement when one is startled.

A person who wishes to see very distinctly, or to hear unusually clearly, will stop to do so. Each one of us has seen the careful cook while

tasting some more or less satisfactory concoction stand still in the middle of the room to do it.

The factors which determine the particular objects to which an individual will pay attention are of two kinds. First, those which, for want of a better name, may be called the objective factors. These are conditions imposed by external circumstances. The first of these is the absolute physical intensity of the stimulus. Other things being equal, the brightest light, the loudest noise, the sharpest pain, will be attended to. But an even more important condition is the matter of variation in intensity. A stimulus which varies in intensity, and, to some extent, which varies in quality, will attract attention even to the neglect of more intense, but unvarying, stimuli. The shooting pain or the flashing light or the sound that becomes louder and more distinct, then dies away, will enforce attention. The fire engines of New York City and of some other large cities, carry siren whistles. These sirens, while not particularly loud, can be heard clearly and distinctly above the rattle and roar of commerce at the corner of Broadway and Forty-second Street. It is true that in this par-

ticular case another principle is involved besides that of intensity, the matter of the meaning of the fire siren. The writer dwelt in a New England mill city for some years. Each mill in that city blew its morning whistle at the unpleasantly early hour of six. One of these whistles was a siren and though not louder than the others, could be easily distinguished from its dozen or more rivals.

To some extent the specific quality of the stimulus will enforce attention. Certain colors are a little more capable of demanding attention than others—reds and yellows rather more than the greens or blues. But this fact may be, at base, a matter of the physical intensity of the stimuli, and there are, beyond doubt, individual differences involved here.

If the foregoing list of factors controlling attention constituted a complete list it would mean that attention is an entirely mechanical process. If objective principles alone are concerned, man must be considered an automaton and nothing more, at least in so far as his attention is concerned. There are, however, other factors of a different nature which are intimately concerned

with the selection of the objects to which we may attend. These principles are not concerned with the physical nature of the stimulus so much as with our past experiences with similar forms of stimuli. These subjective factors, to give them a name, depend upon experience and the effect which experience has produced upon our mechanism. One might, perhaps, sum up the situation by saying that the objective factors are concerned with the effect of the immediately present environment upon an inherited nervous system, and the subjective factors with the effect of past experience upon the same nervous system.

Any idea which has been dominantly in mind will determine the objects to which we pay attention. Our previous mental activities give a certain direction not only to thought but to sense perception. Mental activities acquire a kind of impetus which has power to admit to consciousness or banish from consciousness objects which are, respectively, either similar to or different from them. For example, let us suppose two people have lost quite different objects of value in about the same locality; one has lost a bank

bill, the other a bit of jewelry. Let those two people search over the same ground for their lost property, and then have them compare notes. You will find that one of them has seen objects which nearly or remotely resembled a crumpled bank bill; bits of dirty paper, or rolled up leaves. The other person has noticed every bit of broken glass, every sparkling dew-drop, anything which even by exaggeration could resemble a piece of jewelry. And the two may wholly disagree as to the actual existence of the objects which the other claims to have seen. Or watch a group of men who have been differently trained go through the same bit of wild country. One man, trained as a geologist, will see everything appertaining to his science—evidences of mineral deposits, or outcroppings of various generations of strata. The hunter will see marks betokening the fact that various kinds of game have been present lately. He will notice the presence or absence of the food material of the game he is seeking, pick up every evidence of a trail, and may completely miss the geological facts, so obvious to the first man. And if we suppose a third man to be an artist, he will not



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see the objects which are so clear to his companions but will discover an entirely different group of his own. He is interested in color, in line and curve, and may see only these. The three men on returning will describe entirely different countries, and if they write of what they have seen and where they have been, nothing in their accounts other than the geographical names might coincide.

It is a development of the above, and not a new principle, which states that ideals, ambitions and education determine our selection of objects of attention. The boy who is extremely interested in becoming a surgeon will be attracted by certain kinds of things which his companion, interested only in mechanics, may not see at all, or if he sees will see imperfectly. It is not an exaggeration to say that because the past experiences of individuals have been different, these individuals will actually live in worlds of their own. One will see objects not present to another; an expert may clearly see details which he is unable to point out to another even when the other man tries hard to see them.

There is a third factor concerned in this con-

nection, which cannot be accurately called either objective or subjective,—the fact of heredity. Obviously, different kinds of animals pick out different things in which to be interested; compare, for example, the interests of carnivorous and herbivorous animals. And it is probably true, although it may be the part of wisdom not to make too definite a statement, that in this regard two animals of the same species may be differently endowed; it may be easier for one of two men to get mechanical details than it is for another, though both have had the same training. One man may observe with ease relations and effects such as the heart of the musician or artist delights in; to another man these may simply be non-existent.

It must be understood that all the factors mentioned in this chapter work together. No one of them operates by itself. Together these factors constitute a rather involved series of controls, and while it is not overly difficult to state such a list of controls, it is difficult, if not impossible, in the case of an individual paying attention to certain objects, to say just why he selects those objects. To do so would require super-

human knowledge both of his neuromuscular mechanism and of his past experiences and activities.

The term "interest" is usually applied to involuntary attention. We have an interest in an object, if, when it be present, it forces itself into consciousness. Two or three points are worth remarking in this connection. In the first place it is to be remembered, as mentioned in the last chapter, that extreme pleasantness or unpleasantness connected with an object make it necessary for us to attend to it. Just what it is that makes an object pleasant or unpleasant is another matter, and should not be discussed here. Then again, any objects or facts which are instinctive in their nature or appeal, attain great selective power in this way.

Voluntary attention or forced concentration is a matter of great importance to students, and, indeed, to all men. A teacher is very frequently asked to state methods whereby a student may "learn to concentrate." The question is not obviously absurd, but to answer it satisfactorily is all but impossible. In a measure it is like being asked how one can acquire common sense.

Certain conditions may make attention somewhat easier to control than it otherwise would be. As has been said in the chapter on Habits of Study, the proper arrangement of surroundings is important. Persistent and repeated attempts to get the difficult material is perhaps the secret of mental concentration. It probably does not lie within the power of anyone to remain steadily at a very difficult task for a very long period of time. *It does, however, lie within the power of everyone to return to that same task again and again.* This repeated attack upon a problem or subject accomplishes in the long run the same effect as a persistent keeping at the task, and is very much easier.

There are certain incidental helps, the use of which may be more valuable to some people than to others. It happens not seldom that reading aloud will impress the material read, also the taking of notes in the manner suggested in an earlier chapter. It has been found of help, in the case of some students, to suggest that they shorten the length of their study time, the point being that the knowledge that the end of the study period is set at a certain period not

too far distant, will increase the intensity of study while it is in progress. And again, with many subjects, it is of very great importance indeed that the student set himself definite questions which he is to answer in that evening's reading, thus organizing and directing his attention.

It is helpful to remember that all elementary material is difficult to learn, or, more accurately, must be learned by the most difficult method, that of rote memorization. All subjects get easier as one progresses with them. One of the delights of advanced study in any line is the increasing mastery which the student obtains over the subject-matter. The student should understand that the material which to-day he reads with difficulty, if he can read it at all, will some day become easy. The problems insoluble, perhaps unintelligible to him at present, will some day be answered in a routine way. The power of concentration increases with practice if one is honest in his attempts.

## CHAPTER SIX

### HOW WE REASON

**I**T has been said that no animals and few men reason. This statement is not purely ironic, but implies a very real truth about certain forms of mental process. The complex organism, such as is found in orders of mammals or birds or even in animals somewhat lower in the scale, is capable of extricating itself from certain kinds of predicaments, not, be it remembered, from all. There are several ways in which an animal may extricate itself from a predicament, or, to use another phrase with the same meaning, can solve a problem. An animal, by using its various kinds of behavior forcefully and persistently, may strike upon the solution of its problem by pure accident. It may simply worry its way out of a trap, with no idea guiding it at all. If the problem is one of a certain number of groups of problems the complete activity necessary to solve it is already provided by nature,

which is to say that the problem may be solved by instinct. For instance, the nest-building instinct in birds solves a very intricate problem in a very beautiful manner. Again, a problem may be solved by memory, or by imitation. Perhaps the animal was in a similar situation before, and solved it on that occasion instinctively or accidentally, and on the second occasion simply remembers how it acted on the previous occasion. But now and then problems occur which can neither be solved accidentally nor by instinct nor by memory. For animals such problems are usually insolvable but a certain small proportion of them, when they occur to human beings, may be solved by reasoning. Reasoning is then a method of solving problems, though all problem solving is not reasoning.

It is only a minority of problems to which a reasoning solution possibly applies. And, in the very nature of things, many problems are insoluble. The reasoning process is not, of course, a method of solving insoluble problems, it is only a method of attacking certain forms of complex situations in which human beings are placed. The ability to use this method is found

only in human beings, practically never in the lower animals. All human beings are not capable of using, or, at least, do not use this method. And no human being uses it exclusively nor even very often.

A situation may be difficult, it may be heart-rending and intensely tragic, and yet in no sense be a problem, for the simple reason that there is nothing to be done about it. A situation which is unescapable, inevitable, is not problematic in its nature. Nor can a situation be correctly termed a problem when there is a perfectly obvious method of handling it. It becomes a problem when there are two or more possible methods of handling it and there is a question as to which is the more economical or available of the two. Problems, therefore, involve choice. Where there is no choice, there is no problem. Sorrow, remorse, anger, in themselves do not constitute problems.

The problem consists essentially of two strong impulses, desires or possibilities which contradict each other by their very nature. It is, as it were, a wall with a road across. A deep instinctive or acquired impulse may urge a man to

go in one direction, to do one kind of thing. Another impulse, equally forceful, impels him in another direction. These two forces cannot both work out, and the problem is thereby constituted. How are you going to do two contradictory things at once? Can you attain the two goals? Is there any possible third way?

Further, it is in the essence of the problem that it is imposed upon us from without. Problems are not artificial, they are natural; they are not deliberately created by men themselves, they are forced upon men by forces and circumstances outside human control. Like the lions in Christian's path, they are terrible and menacing situations which cannot be avoided, but must be faced and baffled or arranged in some way or other.

There are three parts to the application of the reasoning process to a problem: it is first necessary that the problem be correctly comprehended, second, it must be analyzed; that is, its most significant feature determined, and the appropriate activity at one's command must then be selected.

To comprehend a problem is to understand

just wherein its difficult features lie. It often happens that this part of the reasoning process is all that is necessary, and if one becomes perfectly sure exactly what his problem is, the problem itself will vanish, or an obvious solution will suggest itself. Beyond all doubt there are problems which continue to threaten and dishearten certain individuals because they have never taken the pains to understand exactly what the problem is. A situation may be difficult, one may be perfectly aware of its terror or its arduousness and yet make no attempt, properly so-called, to understand it. So some men simply surrender to life, and stand with their hands in the air in the face of difficulties. To solve a problem, therefore, it is necessary first of all to understand it.

It is easy enough to say that one must come to understand a problem. But how can one understand, how does one arrive at comprehension? It is all but impossible to give directions. All that can here be said is that the way to comprehend is *to observe, carefully and systematically*. If one, as it were, sits down in front of a problem and studies it carefully and

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persistently, its essential nature and its component parts will gradually become more clear. It requires patient and orderly search, nor will these always be successful. It may also be necessary that previous knowledge of that type of problem be present, either in one's own experience or in available books.

After the understanding of a problem comes the process of analyzing it, cutting it up into various parts, and arranging these in order so that they may be carefully examined separately. In this way the elements of the problem which are new to experience may be distinguished from those which are old. The old portions may then be stated in terms which are familiar to us. The whole arrangement and the total sequence of events is subjected to careful examination, and the reasoning process is already at work.

It lies in the nature of most, if not all, problems, that at any particular moment there is a particular detail of the problem which, for the moment, represents the total problem. Unless the problem is comprehended in its details as well as in its totality it will be impossible to

say wherein this vital center, this strategic point for attack, lies. Here we have the real reason for the analysis. It is to determine where the problem should be attacked. It is also true that this vital center of the problem varies from moment to moment, and it is necessary, if the solution is to be gained, that the method of the attack vary as the vital point varies. This distinguishing of the vital center is the second step in the solution of the problem.

The third step in obtaining a solution of a problem is the selection of the appropriate action to use in view of one's decision regarding its vital center. Of course, there may not be any activity at one's command which is appropriate. In such a case the problem is insoluble. But it often happens that by past experience, by reading, or in some other manner, one has acquired some form of active adaptation which will apply to this case. When that is so, the appropriate activity must be found and put to work on the problem.

Two kinds of training or of ability are of importance here. There is the acquisition of a very great many possible activities, the gather-

ing together of many bits of knowledge. The magnitude of information at one's command will, in many cases, permit the solution of otherwise insoluble problems. The person who is particularly eminent in the possession of information is the learned man, the man of understanding. It is possible, however, that the learned man may not be able in a particular case to determine just exactly which of his many possible ways of attacking the problem is the best way. And his choice may prove amazingly futile on occasion.

There is another factor which has to do the choosing of the particular activity with which to attack the problem. The possession of this ability is popularly known as "judgment," and sometimes makes up for a great lack in information. The man possessing judgment is the clever, the judicious or the practical man. Learning and judgment may or may not exist at once in the same man. When they do co-exist in the same man we find real wisdom.

These steps in the reasoning process may be indistinguishable in a particular problem, but, for all that, are present and may, in most cases, be discovered by careful analysis.

Examples of the possession of learning without judgment will occur easily to the reader. The absent-minded savant of the comic-paper type, the widely informed theoretician in the presence of an intensely practical situation, illustrate the man who having many possible forms of activity at his disposal is unable to choose one of them to solve an actual problem. Examples of the possession of judgment without learning are also not infrequent. The following incident which came to the writer's attention lately illustrates the value of judgment coupled with only a small amount of learning. Two young men at work on a farm, one of them a college sophomore on his summer vacation, had trouble with their horses. One of the horses finally threw itself and became tangled in the harness. One of the brothers, a little excited, for the horse was being hurt, took out his knife, having a long sharp pointed blade, and, with a long sweeping stroke, attempted to cut the harness. In some way or other he drove the knife into his own arm, severing a large blood vessel. No help was at hand, no physician was within five miles, no auto or telephone was available. But the uninjured brother, the sophomore,

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got the instruments which had belonged to his surgeon father, long dead, opened the wound, found the blood spurting with the beat of the heart, actually managed to catch hold of the heart end of the artery, to tie a silk thread around it, and thus to save his brother's life.

A street car struck a bicyclist in a certain city some time ago. The motorman applied his brakes, but not quickly enough to save the bicyclist. The car stopped so that the victim was wedged under it, still conscious. A crowd gathered almost instantaneously, thrilled with horror by the really terrible circumstances, and extremely anxious to do something to alleviate the sufferings of the unfortunate man.

Here we have the problem unanalyzed. Every man in the crowd was perfectly aware that there was a terrible situation facing him. He knew something must be done, but he did not know what to do, where to start. For the majority of men in that group the problem had no salient point, there was nothing to take hold of. Therefore, in this particular case, the crowd did several ridiculous things, as crowds in such circumstances are apt to do. First of all, groups of

men caught hold of the front and back of the car and tried to lift it bodily. Their efforts resulted in failure because the body of the car was simply sprung up and down upon its trucks, which were immovable. Next, with almost unbelievable stupidity, the crowd ran around the street car several times yelling at the tops of their voices. Then they stopped suddenly and ran around the car in the opposite direction. Very evidently there was no realization of any vital center of the whole situation. The problem was an unanalyzed and terrifying whole.

Someone in the crowd finally analyzed the situation sufficiently to realize that experts were necessary. He accordingly summoned doctors, an ambulance and the street railway wrecking crew. When these arrived the easy accuracy and nice detail of their movements proved perfectly that to them the problem was not a great big confusing whole, but a composition of small and attackable parts. The wrecking crew had one simple thing to do. It was to lift the car. This they had done dozens of times before. They had apparatus with them for lifting it, and speedily started to solve this part of the problem. This

done, other details presented themselves to the crew, that is to say, the center of the problem changed as they succeeded in solving it.

The physician when he arrived had a particular definite thing to do. It may have been the administering of anæsthesia, the stopping of haemorrhage—whatever it was, it was definite and not general. The ability of the physician to solve his problem depended upon the possession of certain training and certain information. It also depended upon a certain skill in judgment. These two together constitute wisdom. The success of the physician's attack upon his problem depended in part upon his wisdom, but not entirely, for the problem might have been insoluble for the wisest physician who ever lived.

A fourth form of activity frequently forms part of the reasoning process, that is "proof." The most convincing form of proof consists in putting the chosen activity to work upon its problem. If it works, the problem is solved and the course of reasoning is justified. But in many cases this is impossible. It may be that the working out of the solution may extend through

centuries of time, as in the case of an astronomical hypothesis. Here one must alter his methods of proof, and substitute for the method mentioned an examination of the chosen activity in the light of all one's other experiences, and of the experiences of all other men with whom one is familiar. We assume that all experience is consistent. If one finds that the activity he has selected is at variance with, is contradicted by some well-established fact or facts, that activity is incorrectly inferred. It has happened, and not seldom, in the history of science, that a very small fact has wrecked a promising theory.

## CHAPTER SEVEN

### THE EFFECTS OF EMOTION

IT has been quite lately recognised that emotion plays a part in the general activities of the body far more important than we had hitherto supposed. We have come to know that in their physiological effects emotion and fatigue are nearly identical. Understanding this fact it is at once obvious that the condition of a person chronically emotionally disturbed is not such as to make for a high quality or a large amount of productive labor.

The psychology of emotion is rather a new subject, and we are beginning and only beginning to know anything about it. Perhaps the first hint of the new attitude toward emotion was given us by a Danish physiologist, C. Lange, in 1887, and, at about the same time by Professor William James, then head of the department of Psychology in Harvard University. The statements of these men reversed the orthodox con-

cept of the nature of emotion, and were to the effect that emotion was the result, rather than the cause, of physiological disturbances. They said that one feels anger because of a disturbance of the organism, chiefly of the viscera and the glandular system, accompanied by increased blood pressure, increased heart rate, vacillating and quickened respiration, and some loss of control over the skeletal muscles. While such changes have always been recognized as occurring at the same time as emotion, the view before Lange and James had been that these movements were the effect of the psychic disturbance. Lange and James turned the matter around, and pointed out that the conditions could not only be explained, but could be better explained by considering that the conscious experience of emotion was a result of the bodily movements and not the cause.

It is probably a long step from the James-Lange theory of emotion to our present day theories about it, but James and Lange undoubtedly took the first step in the direction along which modern physiologists and psychologists are traveling.

A recent writer gives us the following definition of emotion: "An emotion is an inherent 'pattern reaction,' involving profound changes of the bodily mechanism as a whole, but particularly of the visceral and glandular systems. By pattern reaction we mean that the separate details of response appear with some constancy, with some regularity and in approximately the same sequential order each time the exciting stimulus is presented. It is obvious that if this formulation is to fit the facts, the general condition of the organism must be such that the stimulus can produce its effect. A child alone in a house on a stormy night with only a dim candle burning may display the reaction of fear at the mournful hoot of an owl. If the parents are at hand and the room is well lighted, the stimulus may pass unreacted to. Stimulus, then, in this sense, is used in a broad way to refer not only to the exciting object but also to the general setting. There is implied also the fact that the general state of the organism must be sensitive to this form of stimulus at the moment. This condition is very important. . . . When the naturalist comes suddenly upon a young

sooty tern under four days of age, it lies stock still (it is capable of very rapid locomotion): It can be pushed about or rolled over without explicit forms of response appearing. The moment the intruder moves away, the fledgling may hop to its feet and dash away or give one of its instinctive cries. The pattern-reaction, that is; the explicit observable pattern, is very simple indeed—a death feint or posture. . . . A serviceable way to mark off an emotional reaction from an instinctive reaction is to include in the formulation of emotion a factor which may be stated as follows: The shock of an emotional stimulus throws the organism for a moment at least into a chaotic state. . . . We might express it in another way by saying that in emotion the radius of action lies within the individual's own organism; whereas in instinct the radius of action is enlarged to such an extent that the individual as a whole may make adjustments to the objects in his environment."<sup>1</sup>

Fatigue and emotion bear a close resemblance to each other. This has been experimentally

<sup>1</sup> Watson, J. B., "Psychology from the Standpoint of a Behaviorist," p. 195.

demonstrated. Animals that have been excessively fatigued show upon examination certain definite physiological changes, and similar, if not identical, changes have been observed in cases of men or animals who have been very greatly angered or frightened immediately before death. Dr. G. W. Crile, of Cleveland, has shown that this is true. He has taken animals which have been killed immediately after being excessively fatigued, and has examined the brain, hypophysis, salivary glands, thyroid, parathyroids, lymphatic glands, lungs, heart, pancreas, stomach, intestines, spleen, adrenals, sex organs, kidneys, bone marrow and muscles. He has found that of all these only three are affected by fatigue—these being the brain, adrenals and the liver. The effects comprise the diminution or disappearance of certain large cells, an effect which, there is reason to believe, is not overcome by rest. In other words the products of fatigue, at least of excessive fatigue, are permanent. It has also been shown that the results of extreme emotion are of the same kind and the same extent. It would look as though the three organs mentioned, brain, adrenals and

liver, constitute a kind of store-house of energy for the body. These three organs together Crile calls the kinetic system, and he holds that when the other organs of the body are excessively actuated they call upon these three organs for energy, and that when these three are exhausted in turn no replenishment is possible.

Certain of these glands produce substances in emotion or in fatigue which have curious and lasting effects upon the organism. The adrenals pour into the system a secretion which we know as adrenalin. Adrenalin, when released into the system, decreases the tonus or tensile strength of muscles and slows the beat of the heart. In other words, it produces relaxation of the muscles and even when present in such a small proportion as one part of adrenalin to two hundred million parts of blood.

Experimental evidence supporting these facts is extremely interesting. If one takes blood samples from a quiet animal and places in it a strip or ring of intestinal muscle, that muscle will begin and continue to beat or contract regularly and normally. But if placed in a sample of blood taken from a frightened, enraged or terri-

fied animal the muscle ring will not beat regularly, but will relax, and complete inhibition of movement may even occur. Such observations as these make apparent the reason why extreme emotion produces a feeling of weakness, of laxness, of fatigue.

It is perfectly possible for a person who is very well equipped in every intellectual way so as to have nearly all the requisites for success to fail in accomplishing much that he desires to do simply because he or she is excessively emotional. The reason is simple. Emotion produces effects equivalent to great exhaustion. It is as if the emotional person were always doing a great deal of extra work. Consequently, his energy being used up in emotional ways, there is left scarcely sufficient for the ordinary activities of life. It can be seen that it is well worth while to attempt to discover methods of controlling or regulating emotion. The methods of doing so can easily be named, but their working is difficult, if not impossible, to explain. We have known of these methods for a long time, and recent scientific discoveries have by no means invalidated that knowledge. Wise men

have always counselled faith and courage, patience and self-possession, even when they have not known why these things were of value. The general philosophy of life which one holds, the success of his personal relations with other men, or the religious outlook aid one tremendously in the control of his emotion. These attitudes are valuable and effective, because in some manner not yet clearly understood, they quiet our emotional disturbances.

It is not advisable, even were it possible, to attempt to eliminate emotion. The most important thing to consider is that emotion should not be abnormal in amount, and the most successful way to prevent this is to seek a normal outlet for our emotional reactions, and not to try to hide or forcibly repress them. Beyond all doubt a very great deal of harm is done in this way. Emotion will not suffer itself to be destroyed by simple repression. Attempts to do so simply result in confining its expression to internal glandular and visceral disturbances. The person who represses his emotion may succeed in keeping his face in perfect control and his external muscles acting normally, but within he may be a

mass of seething movement with gland and viscera in a state of chaotic reaction.

Such repression may produce disorders of the gravest kind. These disorders usually take the form known as "psychic" or "mental." They appear, it may be, as extreme likes or dislikes for objects or persons not warranting such extreme attitudes, they may develop even into the realm of hysteria, or of mono-ideism. Dreams, when of an unusual nature, may be the result of the repression of emotion. Still more striking is the way in which such repression may reveal itself in physical disorders. For instance, prolonged excitement may produce a discolored or pimpled complexion. This is particularly true if the excitement is sexual in origin. A normal release or expression of such emotion is very apt to bring with it a complete clearing up of the skin disorder, and perhaps the amelioration of other bodily ills.

For the emotional person who realizes the bad effects of continued emotion, the remedy is to find, in some way or other, some natural outlet. It may be found in art, in music, in literature, in personal relationships with other peo-

ple. For an emotional person to confine himself to himself may result in some bodily injury which will reveal itself in decreased efficiency.

The man or woman who is always worrying, the person who is continually afraid, the person who is always red-hot for or against a certain thing,—in a word, the super-emotional person—is less efficient than he might be for the simple reason that in his emotion he expends energy which should be expended upon his life's work.

## CHAPTER EIGHT

### THE CAUSES OF FAILURE

**T**HREE is no one feature of college life quite so difficult to handle, from the standpoint of the teacher, as the failures of the pupil in his studies. In every college so far constituted there is a certain percentage of students who fail to satisfactorily complete their work. To the manager of a business, the head of an office, the superintendent of a group of salesmen probably no problem is more puzzling than why some particular man, apparently well equipped, fails to do satisfactory work.

The situations which failures, whether in study or in business, bring with them are always more or less serious, but it is not the occasional failure which one needs to worry about, it is the continual failure. There is nothing necessarily tragic about a single failure in a college course or anywhere else; but there is real

tragedy for the boy or girl, man or woman, who fails regularly and habitually in something which he or she is trying very hard to do.

Why do students fail? Why does an apparently bright young man, one capable of looking after himself very successfully in other forms of activity, prove unable to compete with his fellows in college? Or why does a man or woman who is capable of passing successfully in all of his studies but one, find that there is something about that one which makes it quite impossible for him? The question as to why students fail is not very different from the more general question, "Why do men in general attain different levels of success?" And perhaps the answer to the smaller query will prove to be an answer to the larger as well.

There are several possibilities which have to be considered in the diagnosis of any particular case. Students may fail because they are feeble-minded. This explanation does not usually please the student if one quotes it to him as the reason for his not getting on. That does not, however, affect its possible truth. (If one should genuinely suspect the mental compe-

tency of a student that suspicion would **not** be communicated to the student in bald terms, by any teacher or psychologist worthy of the name.) This feeble-mindedness may be general. That is to say, the student in question may belong actually and technically in that group of people who are mentally incapable of meeting the requirements of the society in which they live. It happens very seldom, of course, that a feeble-minded person gets into college, or into any responsible position in the business world, but now and then it does happen.

But a young person who is not at all technically feeble-minded may not possess mentality of a sufficiently high level to be able to profit by a college course. There is, after all, no reason why everyone should expect to be able to complete and profit by a college course. The college population is a selected group. That does not mean that there are not young people as able and quick and thorough in their mental processes outside the college as in it, but it does mean that there are many young people whose mental abilities are not sufficient to allow them to enter or remain in a first-class college. The

college would lose its chief value to the community if it were levelled down to the intelligence of the lowest five per cent of the population, or even, it may be, to the intelligence of the average. It must be so arranged as to serve the most highly gifted of our young people. Only in this way can the leaders of the nation be produced.

But young people of low intelligence do manage to get into college, probably coming from backward high schools, and these account for a small percentage of the failures.

There seems to exist in some individuals a kind of mental insufficiency or inability toward particular fields. This is probably not related to technical feeble-mindedness, properly so-called. But every now and then the teacher sees a student who apparently displays a real inability to master a certain particular subject. His standings may be good in all other lines of study, but there is one subject in which he displays what seems to resemble actual mental weakness. He may do well in everything except, say, English Composition. There are students who cannot learn mathematics. Their languages

may come easily. They may be able to do laboratory work. They may be able to appreciate and understand literature, but plane geometry and algebra are unsolved mysteries, and remain so, even though very great effort is expended in trying to learn them. Perhaps more students show inability to master language than any other subject. The effort at learning is real, but the material is not conquered.

In so far as actual inability to master a subject is concerned, it is probably very rare. What amounts practically to the same thing, a distaste for a subject so extreme that the student cannot work at that subject for long periods, is not so rare. An explanation is not easy to find. In many cases it lies in unfortunate experiences which occurred when the student first made his acquaintance with the subject. The dislike for a subject may be, at base, a dislike for the circumstances under which it was first met, or even a dislike for the teacher who first introduced one to it.

A far more frequently seen cause of failure than the above is the fact that a capable man or woman is interested in something else more

than he is interested in his studies. The cream of his energy and the best parts of his working time go to doing something other than his actual college or professional work. There are many such forms of divided interest. Perhaps the most common distraction, for college men at least, is athletics. It is no part of the writer's intention to attack athletics in college. Under modern management the evil that athletics do has been reduced to a minimum, and the good increased very much. But for all that, it remains true that there are some men, not always those who engage most actively in athletics, who spend far too much time playing or thinking or discussing football or baseball or some other form of sport.

A very different group of men and women have to spend so much time and energy in earning the means to pay their college expenses that they have not sufficient time left over to apply to their college work. Some students who put themselves through college expend so much time and energy putting themselves through that they have little left to get anything out of college as they go through. It is quite obvious that

this kind of thing does not pay. It may be that before very long the colleges will require that students who are forced to earn their college expenses while studying must take a longer period for the college course than those who have nothing to do but study.

It frequently happens that a student's interest may be in pleasure, perhaps in the more harmless forms of it, such as fiction reading, or movies, or sight-seeing, perhaps in the more vicious forms. It is sufficient to say that the man who spends his time doing one thing is not going to succeed in doing something entirely different. Again, a man or woman may be failing in college because he or she is too actively interested in one of the opposite sex. Cupid has ruined a college course for many a student, even though the student has not dropped out of school. Every teacher in a coeducational school can think of numerous examples of this kind.

There are a certain number of failures occurring in college all the time which are due to certain forms of physical defects, or to improper physiological habits. The cause may be very easy to find, and a visit to the oculist or dentist

or throat specialist may remedy the difficulty. Diseased eyes or teeth or tonsils have caused many a failure in college. Or a student may have improper dietary habits, may not know what to eat, may on very rare occasions not have the means of getting enough to eat. And habits which are vicious, such as the excessive use of alcohol or tobacco or illicit sex attitudes play their part, albeit a small one.

There is another group of factors making for failure in study which is a little hard to describe without being unduly technical. To the psychologist these are known as obsessions and repressions. They are to be found in the cases of the "worrying" student, the slightly hysterical person, and the one who labors under somewhat of a "neuropathic inheritance." This whole subject is a profound one, and should be left in the hands of specialists for treatment. That such cases exist in college as well as in the business world there can be no doubt. Also that many of them can be remedied by wise and sympathetic treatment is also beyond doubt.

The student who is failing in college should first of all determine why he is failing, which

may be a more difficult task for him to perform for himself than he may think. It is wise that he should take the advice of someone else. It may be that in the not far distant future most American colleges will have an office or a bureau whose task it will be to consult with the failing student from the standpoint of the psychologist, and determine just exactly what it is that is blocking his path. For the very large majority of unsuccessful students there is every reason to believe that the causes of failure are removable. If a student, however, finally becomes convinced that he cannot succeed in college, the wisest thing for him to do is to pick some line of life in which he has a fair hope of success and to enter that at the earliest possible date.

While the foregoing parts of this chapter have been written with the student particularly in mind, the principles discussed are general enough to apply to most people who are failing in something in which they wish very much to succeed. Nothing has been said of the person who fails, it matters not in what line, because he does not really care whether he succeeds or not. But men and women who are working

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along any lines requiring a large amount of intellectual labor, are in a situation similar to that of the student, and what is true of one class is true of the other.

## CHAPTER NINE

### THE CHOICE OF A VOCATION

**I**T is always easy to offer advice, and it is sometimes disastrous to take it. Perhaps there are two subjects regarding which no person should be too ready to accept advice. One of these is the profession in which a man embarks for life; the other concerns the person he is to marry. In both of these cases the effect of the choice is so personal and affects other people so little and the considerations involved are so intimate that there is not much probability that advice will prove valuable, even when coming from the best meaning of advisers.

There are, however, certain considerations which are worth setting forth and which should always be remembered by the young person facing that most difficult of all choices, the selection of a vocation. There are many young people who never *select* a vocation, in the proper mean-

ing of that word. Instead they simply accept the job lying nearest at hand and are content to go or to drift wherever the stream of fortune chooses to carry them. But to a large number of people, particularly educated people, such a course is inconceivable, and to them there comes a time when a deliberate choice of a profession must be made. It is to such young people that this is written, and to them are made the following simple general considerations.

First: Avoid blind-alley jobs. That is to say, be very wary of a position which does not naturally act as the approach to another and higher position. Beware of work which is not training you in doing expertly something which is fundamentally worth doing. Do not take that kind of a job which cannot be left unless one, as it were, turns around and retraces his steps. Of course it is true that some apparently blind-alley jobs finally prove not to be so. There have been many cases of men who, having accepted positions which seem to offer no future whatsoever, have found a future in them. Probably such men saw that future when others did not, and for that reason accepted that position.



Second: Avoid unpleasant jobs. This may sound like very unethical advice. It may seem like catering to our instinctive desires for pleasant and easy circumstances. It must be remembered, however, that the reference is to *life* jobs. All positions have something unpleasant connected with them. There is probably no way of earning a livelihood which does not contain monotonous, or even disagreeable or repulsive features. Every man in every kind of work undoubtedly has moments in which he is absolutely convinced that his position is the hardest, the most trying and the most full of drudgery of all positions. But while all this may be true, it is essential to full success in one's life work that one does not choose any trade, profession or business which, to the one choosing, is fundamentally unpleasant. A man has very little chance of attaining a large measure of success if he is not happy in his work. There is, further, the deeper consideration that even if one is commercially or professionally successful, such success has cost too much, is not worth while, unless one is happy at the same time.

Be sure, then, that the job you choose is, basi-

really, an attractive one, that you will like doing the things you will have to do, that you think the job is worth doing, and that you can look forward to a lifetime of doing it without conscious flinching.

Third: Don't forget the ruthless practical demands of every-day life. Take a business-like attitude toward your own working and creative powers. Be sure that the task you contemplate does not require of you more than you are really able to give it. Do not think that your life, your abilities, your young strength are small things to be lightly thrown away, to be wasted in the storming of an all but impregnable fortress. Do not be over-impressed by ideals of impracticable idealism. Do not try to reform the world all by yourself, nor in this generation.

It can be truthfully said of the majority of young people that the greatest responsibility that shall ever come to them in the course of life will be that conferred by the possession of a family of their own; and that no demands will ever be made upon them so insistent as those made by their own children. For while the truth of this statement is not always evident to young

people, it becomes evident later in life, and sometimes at a time or place in which the person concerned may be forced to admit, however unwillingly, that they have taken upon themselves responsibilities of a nature which makes it inconvenient or impossible for them to be really fair to their own family. An illustration of this statement may not be out of order, although many people may disagree as to its real point. The writer will always remember with a good deal of feeling certain expressions used to him by a young girl, a student of his at the time the remarks were made. She had been born in a missionary family in a certain Eastern country and, as the custom is, was sent home to America while little more than an infant. It was impossible for her education to be properly cared for in the land of her birth. In other words, her parents had placed themselves in the position of being more responsible for the well-being of others than for that of their children. The remarks made by this young girl on the occasion referred to were fervent and emotional, and were the product of very deep feeling which she only partially concealed. She had

been brought up in a Home for Missionary Children, where she had been only tolerably happy. She did not see her father or her mother for periods of at least seven years at a time. As she herself put it, "A person has no right to have children if they are not going to look after them themselves."

Perhaps the sense of the foregoing paragraph may be summed up by saying that no choice of a life work should neglect entirely the responsibilities conferred if one should have children. Even in the cases of those who have deliberately and solemnly decided on celibacy, it may be remembered that such decisions have a way of being reversed.

Fourth: Don't be sordid. Nothing that has been said above is to the effect that material success is the greatest value existence can give. It is not. While you are planning to make a living, plan also to make a life, the kind of life that will enable you to be good company for yourself when you are old. A certain position may pay less than others and still be the preferable position for a certain man. That is to say, it may be the position in which he will be most

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happy, will do the best work and where his ability and gifts will count for the most.

The foregoing remarks probably illustrate what has been said in the beginning of the chapter about the improbability of a person profiting much by advice in the choice of a vocation. A job that is unpleasant to one man will not be so to another. The kind of thing that seems very well worth doing to Mr. Smith, seems to Mr. Jones quite trifling. The income which will keep one man happy and contented, give him what he needs to make his life comfortable and complete, may not be at all sufficient for another man, because the conditions of his life are of a different order. All that one man asks or needs may be a small garden and a room full of books; another man may just as sincerely require traveling, or big game hunting, or some other form of extremely expensive recreation. The choice of a vocation should be made by a man for himself, because the responsibility of that choice must be borne by him chiefly, if not entirely.

So much for the general considerations involved in choosing a career. It may be well to

mention certain specific methods more or less known and used at present. If one turns over the advertising pages of certain widely circulated magazines, there will be found pages of advertisements of various methods purporting to teach, for a consideration, how to determine the possession of certain special abilities on the part of individual men and women.

As far as the possession of special ability goes, the average psychologist is willing to admit that there is such a thing. But when it comes to the question whether or not such ability can be recognized before it has been revealed by performance, most psychologists are very doubtful, to say the least. The psychologist sees, and no one better, that certain people have the inborn ability to perform certain kinds of tasks, and that there is great individual variation in this regard. But he recognizes the existence of this inborn ability after the person has proved that he possesses it by performing the tasks in question with unusual facility.

There is a widespread demand to-day for some method of determining in childhood what abilities that child will evince in maturity. The

advantages of such foreknowledge are obvious. It would be of incalculable value in planning a course of education for that child. It is unfortunate that there are no such methods in existence. Nor are they likely to come into existence in the near future. The opinion of competent psychologists on this point is practically unanimous.

Closely related to this idea is the idea, held by many men, that individuals belong to certain groups, few in number, and that there are definite ways of approaching members of each of these groups so as to create in them cordial appreciation or aversion, as the case may be. Some time ago the writer was approached on the street by a young man of his acquaintance, a college graduate, by the way, who asked to be referred to readings which would enable him, as he said, "to so sum up each prospect that I approach that I will know exactly how to deal with him so as to sell him some insurance." There is no doubt that if such a scientifically accurate estimation of a prospective customer were possible it would be a great help, at least to the seller, though perhaps the enforced buyer

might have some misgivings on the subject. But in the present state of our knowledge, there is no possibility of such a method actually existing and working, nor is there any strong probability that it ever will exist. Men are not cast in molds, and there is no way of telling from the appearance of a man exactly and in detail how to speak to him or to handle him, to sell him insurance or anything else.

Historically there have been methods or systems of methods, all more or less on the borderline of fraud, which have pretended to analyze the character of people by their external physical characteristics. The oldest of such systems is that of "Phrenology," founded by Gall in the first decade of the nineteenth century, and somewhat modified later by Spurzheim and certain others. The phrenological concept assumed that there were certain definite units of mental ability, and that each of these was the product of a certain part of the brain. These unit mental characteristics were known as "faculties," and the portion of the brain producing them was known as the "organ" of that particular faculty. Methods of examination were introduced and

the heads of men, women and children examined. When certain abilities were present in marked degree, and it happened that the individual or individuals concerned had certain peculiarities of cranial curvature, it was immediately concluded that these bumps concealed the organs of the abilities under investigation. In this way the skull was outlined, and divided into organs, there being about thirty-three of these. This phrenological concept was never in very good scientific standing, and is completely obsolete to-day. There are certain definite reasons stamping it as an impossible concept which are capable of brief statement.

First: The methods of determining what constituted a faculty or unit mental characteristic were illogical. There is no reason why by the use of that method thirty-three hundred characteristics could not have been arrived at. For instance, if musical ability is a unit mental characteristic, as the phrenologists claimed, why not architectural ability? Why not china-painting ability, or drain-digging ability, or potato-planting ability? There is no obvious reason why

any one of these should be considered as a *unit* any more than the others.

Second: The phrenologists were interested in the contour of the brain, but they studied and measured the contour of the skull, which is a different thing. It may be true that the contour of the brain follows the curves of the skull fairly accurately, but it is also true that the incidence of curvature is by no means close enough to permit of substituting the curves of one for the curves of the other. Yet there are insurmountable difficulties in the way of measuring the contour of the brain itself.

Third: Certain discoveries in 1870 by Fritsch and Hitzig, supplemented by later findings by many others have revealed about how the brain works. Our knowledge to-day concerning localization of function is of such a nature that it completely excludes the possibility of the brain being divided as the phrenologist suggests. We know that certain areas of the brain control certain muscles, certain other areas the various sensory functions. And, though there are certain areas of brain surface of which the function is a mystery, we do know that they do not con-

trol particular abilities in any way whatsoever. Pathological, histological and operative evidence puts that beyond doubt.

The pity of the whole thing is that many well-meaning men and women who, perhaps, should have known better, have exposed the heads of their sons to the hands of the phrenologist, and in consequence of his verdict have sometimes overurged the advisability of entering some disliked profession or business, with resulting unhappiness to all concerned.

There is very little that can be told about a man by casually glancing at his face, at the shape of his nose, or ears, or mouth or chin. Only within the widest limits can one judge a man by his face. It is recorded of Edwin M. Stanton, Secretary of War in President Lincoln's cabinet, that on an occasion when some one objected to his criticism of the meanness in a certain man's face, as being something for which the man was not responsible, he replied: "Every man over fifty is responsible for his face."<sup>1</sup> No doubt this statement contains many

<sup>1</sup> Bradford, Gamaliel: "Edwin M. Stanton," *Atlantic Monthly*, August, 1915.

elements of truth as far as it goes. It is founded on the fact that the muscles of the face which are used in speaking, laughing or frowning are somewhat plastic, and the habit of years will give them a permanent "set."

Experimental psychologists, properly so-called, have very little to say about the possibility of vocational tests. Probably the majority of them in this country are frankly skeptical as to their value beyond determining normality of intelligence or the proper place of a child in a particular school system.

The careful summing up of the tastes and preferences, and still more, of the aptitudes and abilities of the one looking for a position will give more information than anything else. What kind of thing does this man or boy like to do? How does he spend his spare time? When he has a whole day's holiday, what does he do with it? Is there anything he can do unusually well? Has he any outstanding ambition? What would he do were the whole world open to him, and he could take the choice of any position in existence? The answers to such questions as these will provide some informa-

tion as to the kind of position in which such a man will be apt to succeed.

As a matter of fact, however, that which actually determines the large majority of choices of positions, and, as usually follows, of careers, is not the natural aptitude of the man but the availability of the position. A very large number of men and women accept their first position because it is ready at hand, and at the same time is not positively repugnant. This is regrettable. For instance, a young man enters the office of a manufacturing company as a clerk. The firm he works for handles goods in which he has no particular interest. He expects to force himself to acquire such an interest with the passage of the years, and to become genuinely concerned over the fortunes of cotton, or coffee, or candy or chairs. In very many cases he succeeds, and leads a tolerably happy life. He may, however, have moments in which he wishes that he had searched the field of human endeavor more carefully before he irrevocably chose that corner in which his life's work should thenceforth be done.

A particularly unfortunate example of this

accidental choice of a profession is to be found in teaching. A very large number of young people, young women especially, enter the profession of teaching for the sole reason that it is handy. The work is not attractive, though it may not be absolutely repulsive; it is merely available. Teaching positions are not very difficult to obtain. Some of the young people who go into teaching in this casual way may be deceived by an idea that their hours will be short and their pay good. But even if they understood the truth in these two respects, the probability is that the easy availability of teaching positions would continue to attract young women. To some extent this position is brought about by the fact that a large number of young women applying for teaching positions are simply looking for positions for two or three years, after which they expect to be married. But a great number of them become teachers, not from choice, because they have done no choosing, but because a teaching position is comparatively easy to obtain. The effect on our school systems is most unfortunate.

Closely allied to the subject which has just

been discussed is the question of what characteristics are necessary for success. What will determine the success of a man in his chosen field?

As has just been said, above all things a man must like his work.

One of the principal characteristics which produces success is industry, the ability to work hard, and to keep working for a long time. Any man who hopes to do any form of work very well has got to get the habit of keeping its problems before his mind's eye for long and tiresome periods.

Quite as important as the matter of industry is the matter of intelligence. A man who works hard will get somewhere, but he will not get nearly so far if he be a stupid man as if he be bright. But here we deal with a factor which we cannot increase, no matter how much we wish. A man's intelligence is of a given amount and he simply has to use such of it as he possesses. The average normal person, however, probably has more intelligence than he ever uses, and the vast majority of persons do not

have to worry about being intelligent enough for their positions.

It is rather trite to say that a man must be honest. Of course he must. But he must be more. He must never be even suspected of dishonesty. Like Cæsar's wife, he must, literally, be above suspicion. Interesting evidence of this truth is given by the questions asked by the big bonding companies of those whose names are given them as references by men asking for bond. Examples are as follows: "Have you ever heard that he has been *suspected*: Of drunkenness, of gambling, speculation, extravagance, dishonorable conduct, fraud or dishonesty?"—The Massachusetts Bonding and Insurance Company. "Was he ever *suspected* of fraud or dishonesty or any dishonorable act? Is he, or has he ever been, addicted to intemperance, gambling, immorality, or other vice?"—The United States Fidelity and Guarantee Company. Is he "sober, careful and reliable; lives within his means; is free of *even the suspicion* of fraud or dishonesty, dishonorable or improper conduct, gambling, drinking or speculation?"—The American Surety Company. And the United

States Civil Service Commission asks as well: "Does he use profane, vulgar or coarse language?"<sup>2</sup>

To be above suspicion is to have a valuable asset indeed. To students this is a matter of interest. What about a student who is dishonest in class? Is it probable, more, is it possible, that if you ever have to have business dealings with a person whom you have known to have been dishonest in the classes which you attended together, you will feel absolutely sure that his word is reliable? Will such a man ever be free of the suspicion of dishonesty?

The ability to work with others is based upon generously estimating the faults and virtues, the failures and successes of one's colleagues. It requires patience and kindness and fairness,—these are not particularly prevalent qualities, and their possession is an asset undoubtedly.

Add to these another factor—the ability to take a far view, to see the future and the past, and to weigh the present in its proper relation to these. This means that one must see the real living importance of particular failures or

<sup>2</sup> Puffer, J. Adams: "Vocational Guidance," pp. 266-268.

particular successes, of particular pleasures or particular deprivations. The worthwhileness of certain endeavors, the actual importance of the results of labor, all these enter into what is meant by a far view. One must evaluate his work *sub specie aeternitas*.

To the above may be added one more statement in the form of a quotation from the railroad magnate, the late James J. Hill, "If you want to know whether you are going to be a success or failure in life, you can easily find out. The test is simple and infallible. Are you able to save money? If not, drop out! You will fail as sure as you live. You may not think so, but you will. The seed of success is not in you."

The above statement may seem harsh, sordid and inconsequential, but it probably contains more than a grain of truth. It is not easy to save money, no matter how large one's income may be. It requires patience and self-sacrifice and, above all, the ability to take a far view. If a man possesses these, he most certainly possesses the characteristics which make for success.

A few words are in order in conclusion about

certain special professions, or rather about certain special abilities which are of use in certain professions.

First: Mechanical ability. If a young person possesses mechanical ability of a high order and is able by study to couple with that ability theoretic knowledge he has assets of a very high value which will pay him well. Men of this type are represented by the engineer, by the inventor, to some extent by the physical scientists and the surgeon.

Second: Executive ability is the ability to handle men, to lay out their courses of acts, to suggest ways and means to them without antagonizing or repulsing them, to plan ahead, to organize, to decide quickly, to "stand the gaff." The executive has to accept responsibility, he has to accept blame, he has to be perfectly willing to stand by what he has done. Of all professions this is the most highly paid.

Third: Salesmanship. It is especially important if one would be a salesman that he have a natural delight in trading. He must be a good "mixer." He should not be too great a talker, and must be a hard worker. He is probably

happier if he possess a temperament that is not easily rebuffed nor subject to oscillation, to extremes of pessimism and optimism.

Fourth: Many of the professions, for instance, those of the scientist, the lawyer and the doctor, require as their fundamental pre-requisite that one have an overwhelming interest in a certain subject. This is the fact, hidden to many people, which makes the work of such men often so satisfactory and pleasant to themselves. They are very much interested in the thing they are doing. They would rather do that thing than anything else under the sun, and although in many cases they do not receive much worldly recognition nor very high salary, yet they may be extremely happy.

## CHAPTER TEN

### CHARACTER AND TEMPERAMENT

THE discussion of character and temperament constitutes, to some extent, the summing up of all that has been said about instinct, habit, memory, repression, obsession, attention and reasoning, with perhaps a few elements added. Do not these determine the character of the man? Knowing these, do you not know the man himself? It may be possible to say in reply that all one knows is how the man will act, and not the essential man. The thesis of this chapter is that the man who acts is the real man, and that his activities are determined by the list of factors just mentioned.

In other words, character is not something distinct from the ordinary methods of moving and remembering, of feeling and thinking. It is the name which we give to all of these psychological factors in operation together.

Character is the sum of the veritable attitudes

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of man toward the situations and problems of his ordinary life. The term implies a certain degree of foreknowledge as to how a particular man will act in the future, and is founded upon our knowledge of his past performances. It more or less assumes that if we knew enough of what a man has done, or has been, or what he has seen or read, we are able to prognosticate how he will act in a given situation. Now and then we are disappointed at our failures to do this. Such failures must, in the last analysis, be caused by the gaps in our knowledge of the man, for the man who does certain things apparently inconsistent with his character, is simply acting in a way inconsistent with our knowledge of his character, and in no way inconsistent with his actual character. We may not know him thoroughly, but his actions are the truest revelation of his real self.

There are as many characters in existence as there are men, and they do not, therefore, fall into any sweeping classification, but for all that, there are certain particular forms of character which may be sufficiently recognizable to be worthy of discussion. We speak of men pos-

sessing strong character or weak character or explosive or vacillating or undecided character. These terms all mean something, although they are all so popularly used in the loosest kind of way. Take, for instance, the man of so-called strong character. This expression means essentially that the man in question is one of habitual dependability—that we know ahead of time what he is going to do, and can prophesy his behavior with some little degree of confidence. It is worth pointing out that such a man may not be a good man, that strong character and goodness are not synonymous terms at all. A bad man of the worst possible type,—a murderer, a thief, an habitual criminal—may be a man of the strongest possible character.

The man of strong character is the one who is chiefly influenced by long past situations. That which happened yesterday influences him very little as compared with that which happened last week or ten years ago. This means that there have occurred situations in the man's life the effect of which has been lasting. And these past influences are more potent to determine the activity of the man than any stimula-

tion which may happen to be present at any moment later on. We find examples of this in every sphere of life. The student who has an ambition toward attaining professional success, an ambition which came to him in his boyhood days, is capable of disregarding the ever-present stimulus of fatigue or of poverty during his student days. The strength of the character of the student is made evident by his ability to disregard the present stimulus in favor of the past. A similar situation may be found in the way in which a man may be moved by the motive of revenge. Some wrong done to him may come to be the controlling factor in his life. Nothing else is quite so important; and because of that one situation the balance of his life is colored and his activities are directed entirely to the satisfaction of his vengeance.

The man who is too much influenced by the long past situation is the man we call the conservative, the Tory—the man who is continually speaking of the good old days and who sincerely believes that in time past the school systems were better, the newspapers were more able, the winter storms more severe—nothing nowadays

is as good as it was then. This man is essentially a "No" man. His natural reaction to most situations which occur suddenly is a negative one. A particular man, for instance, an able man, a leader in the industrial and religious worlds, well known to the writer, seems invariably to react negatively toward every novel situation. He has been known to say when a certain project was put before him, meeting as a member of a certain committee, that the proposition was new to him, but he was against it. He had had no time to think it over. He did not wait to balance the situation at all but he was at once against anything in any degree novel.

Such a man is undoubtedly strong, and plays a necessary part in our social organization. But when his characteristic attitude is overdeveloped, it is apt to produce harmful results in the way of preventing interesting or valuable innovations.

The type of character which is ordinarily termed weak or vacillating is that of the man who is chiefly affected by the immediately present stimulus. He is the plaything of the forces about him. You may read in him the men with

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whom he has lately been conversing, the books he has just read, the experiences he has lately passed through. He does not gather much lasting effect from his experiences. He is at the mercy of the present situation, whatever it may happen to be. He reflects his chance companions of the moment.

If you find such a man in church, he is the most religious of the religious, and, in a sense, is so quite seriously. If he is coaxed into a saloon, he enters that and its attendant life with enthusiasm. There he is the boon companion of his associates. Whatever he does, he does under the influence of the men immediately around him and he plays his part with energy.

Such men may be either "Yes" or "No" men. Ordinarily they are "Yes" men,—perfectly willing to agree with every situation, avoiding nothing so much as collision or difficulty. Occasionally he may be a "No" man, that is to say he is consistently controlled by the situations in which he finds himself, but controlled negatively. He is always at odds with the people with whom his lot is cast. He is always "Agin' the Government." He is always objecting. If you meet

such a man on his way to the polls, you can control his vote by being careful to vehemently criticise the man whom you wish him to support. His natural perversity will appear and he will vote for that man. Actual cases of this kind may, no doubt, be supplied by the experience of many who read this.

Men of this type are apt to be found among radicals and extremists, they are often men with a small grievance, usually unjustified.

There are numbers of men who can be classed in neither of these groups. Fortunately such men constitute the majority of mankind. In most men there is a certain combination of judgment and reasoning with the ability to act. On the whole, the majority of men are sanely capable of weighing and comparing remote and recent stimuli and of deciding which of the two is the better guide of action. The majority of men can neither be described as "Yes" or "No" men, they are sometimes "Yes" and sometimes "No." Certain principles and certain preferences and, it must be admitted, certain prejudices, are present in the majority of us, but generally speaking, we use a fair amount of

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judgment and a fair amount of reasoning in controlling our activities.

So much in explanation of what is meant by character. Suppose men assume that these various forms of character exist, and that one is preferable to another? Suppose we experience or imagine a form of character which we would like to attain or possess? What can we do about it? How can I attain that preferable character myself? What can be said about the process of character building? That, after all, is the practical and important question.

There are three or four things that may be said about character building, but it must be understood that when they are said the question will not be completely settled. There remains something of the nature of artistry, as opposed to technique, in character building, and in some sense it is fundamentally true that art cannot be taught.

In the first place, character grows slowly. There is some advantage in slow development. Speaking very generally, slow growth produces rather durable material and long and valuable life. This is more or less true in the zoological

and botanical world, and it is probably even more true in the mental world. The average psychologist is not particularly glad to find a child who has developed extremely quickly. The precocious child is not always the healthiest, speaking in a psychological sense, and the curve of acquisition of knowledge and skill which slants up very suddenly is not necessarily the best curve. One of the prominent psychologists in this country has said that any system of education which teaches a small child a very great deal in a very short time is thereby proved a bad system. And as in the mental, so in the moral realm. The character of man is formed throughout weeks, months and years of childhood and boyhood life. It is formed in his play, in his reading, in his pleasures, and in his tasks. Character is not to be thought of as suddenly developing. Only very gradually does one realize that he who was the child of yesterday is the man of to-day, an individual, expressing individual attitudes toward the world in which he lives.

Further, character building is inevitable. Beyond all doubt the effect of to-day will be present to-morrow. There are no very rapid

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changes. Even apparently sudden religious conversions have histories. The apparent breakdown in character is, after all, not a sudden breakdown. In a sense, a person never acts out of character, if we but knew all. The boy who is cowardly in his games while in school is not going to become suddenly courageous when he enters business life. The student who is dishonest in his classes is not going to suddenly become a pattern of rectitude in his commercial or business life. The inevitability of character building has its tragic aspect. That which is written is incapable of being erased. There is a sense in which we cannot turn over a new leaf. We cannot disregard yesterday. We cannot simply resolve to neglect any particular group of experiences or action, and say that we will not count these. They are counted, and they are part of us.

Character building begins with thinking. The man's thoughts are the beginning of the man's acts, and the acts of his final character. It is probably not possible for the man to be a dreamer, and also a daring and incisive executive. It is not possible for the small boy to be

wildly impracticable in his mental life, and densely prosaic in all his business life. Nor is it possible for one's thoughts to follow impure or salacious lines and the external life to continue for an indefinite period pure and chaste.

That which is begun in thought continues in act. There is an actual continuity between thinking and acting, basic in nature, incapable of being neglected. As thinking is the beginning of action, so action must result from thinking. These two forms of activity are not fundamentally diverse. Action produces or develops into general attitudes and habits. These constitute whole groups of relationships between the individual and society in which he lives. That which in the beginning is quite trivial, it may be an ordinary fit of anger or jealousy, it may be simple curiosity, is capable of finally becoming a confirmed pessimism, an aversion to society or impurity. No one of these is capable of being inconsistent with its mental progenitor. Finally, there results that which we call character or personality. Little by little has grown an indestructible entity, which, whether we like or dis-

like it, cannot be overturned or destroyed in a moment.

Temperament is the name which we give to the persistent little idiosyncracies of response. Particular groups of people may be known as respectively pugnacious, or cheerful, or pessimistic or fun-finding. These groups will, in the face of similar situations, act in different ways. To some men the world is always on its last legs. Everything that is good is passing away and there is nothing to look forward to but a very dismal future indeed. To certain other people everything is beautiful, there is a good side even in the most dire situations. The silver lining of the clouds is always more obvious than the clouds themselves, and it must be a very serious trouble indeed which produces depression. Another man accepts everything that comes in a fighting mood. He is pugnacious to everyone and everything. He often offends, and he means to offend. He regards the world as an opponent to be mastered and conquered. One of the facts most characteristic of such attitudes is their persistency.

That such attitudes are, to some extent, the

result of training is beyond all doubt. Early experience, early influences, certain kinds of education, particular failures or successes in life, all of these enter very largely into determining the individual's attitude toward his world. But while this is true, it may also be that there are fundamental variations of the organisms of the people concerned; that temperament is partly a matter of the degree of perfection of working of the mechanism of the body. One may be persistently pessimistic because of slight chronic indigestion; other persons may always be cheerful because of their perfectly abounding health. They have never known a sick day, they have never felt a pain, their bodies work flawlessly. Certain modern physiological and psychological investigations suggest that beyond such gross physical conditions there is a possibility that differences in temperament may depend upon some very obscure balancing of the secretions of the ductless glands of the body. This is simply a possibility—perhaps a little more in the light of recent investigation.

When it comes to determining just why a person is a certain kind of person rather than

another kind, there is no set phrase that will answer the question. The matters of temperament and of character which have been so briefly discussed are names given to somewhat definite attitudes, themselves made up, as has been said, of the various forms of response of which humanity is capable. But beyond all these, and somewhat different from them, there is another factor which we ordinarily name "will." In the discussion of will we again enter debatable ground.

There are two groups of theories of will. In the first place there are those theories represented by Pillsbury,<sup>1</sup> who tells us that will consists of the sum-total of the conditions of action or choice. Then, again, there are theories, expressed by many religious and ethical teachers, to the effect that will is an entity which stands between the conditions which lead to action and the actions themselves. According to this second group the essential work of will is to render decisions and determine lines of action. It can easily be seen how completely distinct the

<sup>1</sup> Pillsbury, W. B., "Fundamentals of Psychology," p. 526.

